A. INTRODUCTION

This chapter assesses the potential impacts resulting from construction under the proposed actions. As described in Chapter 1, “Project Description,” the two applicants—DD West 29th LLC (Applicant A) and West 30th Street LLC (Applicant B)—are requesting discretionary actions to facilitate the redevelopment of two project sites in West Chelsea (see Figure 1-1). The project sites consist of project site A located at 601 West 29th Street and project site B located at 606 West 30th Street, which are bounded by West 29th and West 30th Streets, Route 9A/Twelfth Avenue and Eleventh Avenue (see Figure 1-2). The Project Area includes the two project sites as well as an intervening lot (Lot 38), which is not part of either project site. The two project sites and Lot 38 would be rezoned and included in the Special Hudson River Park District.

Construction impacts, although temporary, can include noticeable and disruptive effects from an action that is associated with construction. As stated in the 2014 *City Environmental Quality Review (CEQR) Technical Manual*, determination of the significance of construction impacts and need for mitigation is generally based on the duration and magnitude of the impacts. Construction impacts are usually important when construction activity could affect traffic conditions, hazardous materials, archaeological resources, the integrity of historic resources, community noise patterns, and/or air quality conditions.

According to the *CEQR Technical Manual*, construction duration is often broken down into short-term (less than two years) and long-term (two or more years). Where the duration of construction is expected to be short-term, any impacts resulting from such short-term construction generally do not require detailed assessment. As described below, it is estimated that the construction on project sites A and B would take 42 and 23 months to complete, respectively. Therefore, their construction duration would be considered long-term. Construction of project site B would begin in the fourth quarter of 2018, while construction of project site A would begin in the first quarter of 2019. Construction on project site B could be completed by the end of the third quarter of 2020, and construction on project site A is expected to be complete in the second quarter of 2022. This assessment of potential cumulative construction impacts analysis was prepared conservatively assuming the worst case time period of project site A would overlap with the worst case time period of project site B. This chapter also considers potential impacts of the ongoing construction at project site A on the completed project site B building.

This chapter describes the City, state, and federal regulations and policies that govern construction, followed by the conceptual construction schedule assumed for analysis, and the types of activities likely to occur during construction. The types of construction equipment are also discussed, along with the projected number of workers and truck deliveries. Finally, the potential impacts from construction activity are assessed and the methods that may be employed to avoid potential significant adverse construction-related impacts are presented.

For each of the various technical areas presented below, appropriate construction analysis years were selected to represent reasonable worst-case conditions relevant to that technical area, which could occur at different times for different analyses. For example, the noisiest part of construction may not be at the same time as the heaviest construction traffic.

PRINCIPAL CONCLUSIONS

As is the case with any major construction project, construction of the Project Area as defined by the Reasonable Worst Case Development Scenario (RWCDS) would result in some temporary disruptions in the surrounding area. Construction for the proposed actions is anticipated to be completed over a 42-month period with completion of project site A in 2022 and the completion of project site B at the end of the third quarter in 2020. As described in detail below, construction under the proposed actions would result in significant adverse transportation and noise impacts. Additional information for key technical areas is summarized below.

As discussed in detail below, construction at project site B is anticipated to be completed before the end of construction at project site A. At the earliest anticipated completion date for project site B, the most intense construction activities (demolition, excavation, foundation, and superstructure construction) would be completed at project site A. The remaining construction activities would generate fewer construction trips and would not use heavy diesel equipment. Therefore, no air quality or noise impacts are anticipated to occur on project site B during the later phases of construction—exteriors, interior and finishing as well as the final month of superstructure—of project site A.

TRANSPORTATION

Based on the construction trip projections and comparison with the operational trip analysis results, construction for the proposed actions would have the potential to result in significant adverse traffic and pedestrian impacts.

Traffic

During peak construction, the project-generated vehicle trips at any particular intersection would be comparable to what would be realized with the full build-out of the proposed actions in 2022. Therefore, any potential traffic impacts that may occur during peak construction would be similar to traffic impacts that would be identified for the future with the proposed actions (With Action condition) in Chapter 14, “Transportation.” As summarized in Chapter 21, “Mitigation,” all of the significant adverse traffic impacts could be fully mitigated. The detailed construction traffic analysis presented in this chapter shows that comparable measures could be implemented to similarly mitigate the temporary significant adverse traffic impacts during construction.

Parking

The anticipated construction activities are projected to generate a maximum parking demand of 209 spaces during peak construction. Because there is expected to be a parking shortfall in the future 2022 No Action condition, this construction parking demand, although temporary in nature, could result in a parking shortfall of up to 276 spaces during the weekday peak midday period. This excess construction parking demand would be accommodated on-street, to a small extent due to limited availability, or by the off-street spaces and parking facilities available beyond a ¼-mile radius of the project sites. While there could be a temporary parking shortfall, as stated in the *CEQR Technical Manual*, a parking shortfall within Manhattan and other transit-rich areas of New

York City generally does not constitute a significant adverse impact due to the variety of alternative modes of transportation that are available in these areas.

Transit

During peak construction, the project-generated transit trips would be less than what would be realized with the full build-out of the proposed actions in 2022. Therefore, any potential transit impacts that may occur during peak construction would be similar to or less than any impacts that would be identified for the With Action condition. Since no significant adverse transit impacts were identified for the With Action condition in Chapter 14, "Transportation," the construction for the proposed actions would not result in any significant adverse transit impacts.

Pedestrians

During peak construction, the project-generated pedestrian trips would be less than what would be realized with the full build-out of the proposed actions in 2022. While these construction worker pedestrian trips would primarily occur outside of the typical commuter peak hours (8 to 9 AM and 5 to 6 PM) and be distributed among numerous sidewalks and crosswalks in the area, there could still be a potential for significant adverse pedestrian impacts attributable to the projected construction worker pedestrian trips. However, these impacts, if they do occur, would be equal to or less than the corresponding operational impacts described in Chapter 14, "Transportation." Accordingly, measures required to mitigate these impacts, which can be advanced at DOT's discretion prior to the completion of the proposed projects, would be equal to or less than those described in Chapter 21, "Mitigation." In addition, sidewalk protection or temporary sidewalks would be provided in accordance with DOT requirements to maintain pedestrian access if needed.

AIR QUALITY

An emissions reduction program would be implemented at each of the projects sites to minimize the effects of construction activities on the surrounding community. Measures would include, to the extent practicable, dust suppression measures, use of ultra-low sulfur diesel (ULSD) fuel, idling restrictions, diesel equipment reduction, best available tailpipe reduction technologies, and the utilization of newer equipment. With the implementation of these emission reduction measures, the dispersion modeling analysis of construction-related air emissions for both nonroad and on-road sources determined that particulate matter ($PM_{2.5}$ and PM_{10}), annual-average nitrogen dioxide (NO_2), and carbon monoxide (CO) concentrations would be below their corresponding *de minimis* thresholds or National Air Quality Ambient Standards (NAAQS), respectively. Therefore, construction of the proposed actions would not result in significant adverse air quality impacts due to construction sources.

NOISE AND VIBRATION

Noise

The detailed modeling analysis concluded that construction for the proposed actions has the potential to result in construction noise levels that exceed *CEQR Technical Manual* noise impact criteria for an extended period of time at 534 West 30th Street, residences near Eleventh Avenue and West 29th Street and areas on the High Line directly across West 30th Street from the construction work areas.

The north, south, and west façades of 534 West 30th Street and the north and west façades of residences near Eleventh Avenue and West 29th Street would experience maximum exterior noise levels up to low 80s dBA, with noise increases up to 14 dBA compared with No Action levels for durations between approximately 22 to 38 months. Consequently, interior noise levels during construction would be expected to be up to the mid 50s dBA at individual residences, which would result in noise levels higher than the 45 dBA threshold recommended for residential use according to CEQR noise exposure guidelines. Additionally, areas on the High Line directly across West 30th Street from the construction work areas would experience noise levels in the mid 60s to high 70s dBA, which represents increases in noise levels up to approximately 14 dBA compared with No Action levels for approximately a 38 month period during construction. The predicted noise levels during construction at this open space would exceed the levels recommended by CEQR for passive open spaces (55 dBA L_{10}). (Noise levels in these areas already exceed CEQR recommended values under the existing condition).

Construction noise levels of this magnitude and duration would constitute a significant adverse impact at these locations. At other receptors near the project site, including open space, residential, and institutional receptors, noise resulting from construction for the proposed actions may at times be noticeable, but would be temporary and would generally not exceed typical noise levels in the general area and so would not rise to the level of significant adverse noise impacts.

Vibration

The building of most concern with regard to the potential for structural or architectural damage due to vibration is the 34-story 534 West 30th Street mixed use residential building located approximately 100 feet east of the of the project sites. Based on the distance from the project sites, PPV would not exceed the most stringent 0.5 in/sec threshold at the receptor location mentioned above.

While vibration resulting from impact pile driving may be perceptible and potentially intrusive, it would be of limited duration as pile driving activities would not last more than approximately 10 months. Furthermore, vibration levels would be lower at floors above the grade level (reducing by approximately 1–2 dB per floor), and at the nearest receptor (i.e., 534 West 30th Street), vibration levels would be below the perceptible threshold at the 18th floor and above.

Consequently, there is no potential for significant adverse vibration impacts from the proposed actions.

HISTORIC AND CULTURAL RESOURCES

As described in Chapter 8, "Historic and Cultural Resources," the Project Area does not possess archaeological significance and no further assessment is warranted. Therefore, the proposed projects do not have the potential to result in construction period archaeological impacts.

The proposed actions would not result in any significant adverse impacts to architectural resources in the Project Area as no historic architectural resources are located in the Project Area. The granting site, which contains Piers 59, 60, and 61, and their associated headhouses would not be affected by the proposed actions.

Within the 400-foot study area (see Chapter 8, "Historic and Cultural Resources"), architectural resources analyzed include properties and historic districts listed on the State/National Registers of Historic Places (S/NR) or properties determined eligible for such listing (S/NR-eligible); and New York City Landmarks (NYCLs) and Historic Districts, and properties determined eligible for landmark status ("known architectural resources"). Additionally, a survey was conducted to identify any previously undesignated properties in the study area, which were then evaluated for their potential S/NR or NYCL eligibility ("potential architectural resources"). No architectural resources in the 400-foot radius from the Project Area would be directly affected by the proposed actions. Proposed construction activities in the northern portion of the Project Area would occur within 90 feet of the High Line. To protect this historic architectural resource during project construction, a Construction Protection Plan (CPP) would be prepared and implemented. Therefore, the proposed actions would not result in any significant adverse impacts to historic architectural resources.

HAZARDOUS MATERIALS

The proposed actions would entail demolition of the existing structures and excavation for new foundations and, in some areas, a proposed cellar level which would extend below the depth of the existing basements. A detailed assessment of the potential risks related to the construction for the proposed actions with respect to any hazardous materials and mitigation measures related to the potential impacts is provided in Chapter 11, "Hazardous Materials."

To reduce the potential for adverse impacts associated with new construction resulting from the proposed actions, further environmental investigations and remediation will be required. To ensure that these investigations are undertaken, hazardous materials (E) Designations would be placed on the proposed project site lots and Lot 38. The (E) Designation requires approval by the NYC Office of Environmental Remediation (OER) prior to obtaining NYC Buildings Department (DOB) permits for any new development entailing soil disturbance.

With the inclusion of the measures required by the (E) Designations, construction for the proposed actions would not result in significant adverse impacts related to hazardous materials.

CONSIDERATION OF THE HUDSON TUNNEL PROJECT

Construction activities for the recently announced Hudson Tunnel Project would occur to the immediate west of the Project Area. In addition, construction for the Eastern Rail Yards is occurring and Western Rail Yards construction would also occur in the vicinity of the Project Area. However, the Eastern Rail Yards project will be largely complete by the start of construction for the proposed projects with only the least intensive stages of construction remaining (i.e. interiors and finishing). The Western Rail Yards project has undergone substantial changes including funding sources and revisions to construction timing and phasing since publication of the project's FEIS in 2009. For example, the FEIS assumed that the entire Western Rail Yards project would be completed by 2019. These changes are expected to require a supplemental environmental review taking into account the proposed actions on Block 675 East. Therefore, taking into account the near term completion of the Eastern Rail Yards, the uncertainty of the current status of the Western Rail Yards project, and the fact it is expected to undergo its own environmental review only the construction activities for the Hudson Tunnel Project are considered and assessed below.

The plans for the Hudson Tunnel Project would include reinforcing the Northeast Corridor's Hudson River rail crossing by constructing a new tunnel under the Hudson River that will connect to Pennsylvania Station. The agencies, with the Federal Railroad Administration, are coordinating preparation of an EIS pursuant to the National Environmental Policy Act (NEPA). The Notice of

Availability of the DEIS for the Hudson Tunnel Project was issued on July 7, 2017.[1] Construction of the Tunnel is expected to start in 2019 with completion of the project expected in 2026 in the future with or without the proposed actions.

The construction transportation analysis prepared for the Hudson Tunnel DEIS incorporated the operational trips projected for the Block 675 East proposed projects in the future construction background. This analysis subsequently concluded that the construction of the Hudson Tunnel Project would result in significant adverse impacts to nine intersections, a single sidewalk, a single corner area, and two crosswalk locations within the area.[2] As part of the construction of the Hudson Tunnel Project, changes to signal timing and widening sidewalks were proposed as mitigation measures within the Hudson Tunnel DEIS that would fully mitigate impacts at all but four intersections and one corner area. These locations where unmitigated impacts were identified in the Hudson Tunnel DEIS are not among the locations analyzed for the Block 675 East proposed projects given that the proposed projects are not anticipated to generate a significant number of trips at these locations. Peak construction trips associated with the development of the Block 675 East proposed projects would be comparable to the peak operational trips that would materialize upon the full build-out and occupancy of these projects. Hence, the Hudson Tunnel DEIS's construction transportation analysis, which accounted for these operational trips, provided a conservative depiction of conditions during that project's peak construction since Block 675's peak construction would have occurred at an earlier point in time. During Block 675's peak construction, Hudson Tunnel's construction activities would not have reached its peak. Since peak construction of the Hudson Tunnel would be expected to yield fewer than 100 construction workers present on the Manhattan construction sites, its effects during peak Block 675 construction are expected to be minimal and part of the typical background condition in the area surrounding the project sites.

Based on the conceptual construction schedule presented in the Hudson Tunnel DEIS, the period of highest emissions intensity is anticipated to occur from December 2019 to March 2022 at the Twelfth Avenue shaft construction site—during excavation and construction of the Twelfth Avenue shaft as well as cut and cover of West 30th Street. This period is not expected to overlap with the peak construction activities for the proposed projects (excavation and foundations). During the analysis periods for the proposed actions, the overlap of construction activities would result in higher total air quality concentrations of NO_2, CO, and PM_{10} due to the pollutant emissions associated with the construction activities for the Hudson Tunnel Project. However, the combined maximum pollutant concentrations from construction activities for both the proposed actions and the Hudson Tunnel Project would not result in an exceedance of the NAAQS for these pollutants. Combining the maximum concentrations from the Hudson Tunnel Project with the maximum concentrations from the proposed project results in a conservatively high estimate of potential cumulative concentrations. It is likely that the highest results from the different projects would occur under different dates and different meteorological conditions (e.g., different wind direction and speed) and consequently would not actually occur simultaneously.

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[1] The information and results of the Hudson Tunnel Project presented in this chapter are based on the Hudson Tunnel DEIS, The assessment for the proposed actions will be updated with any additional information presented in the Hudson Tunnel FEIS, as appropriate.

[2] U.S. Department of Transportation Federal Railroad Administration and NJ TRANSIT. Hudson Tunnel Project Draft Environmental Impact Statement and Draft Section 4(f) Evaluation. Chapter 5A: Traffic and Pedestrians. Tables 5A-45 and 5A-48. June 2017.

The DEIS for the Hudson Tunnel Project concluded that $PM_{2.5}$ incremental concentrations exceed the City's *de minimis* criteria at locations immediately adjacent to the Twelfth Avenue shaft construction site during the most intense period of construction for the Hudson Tunnel Project. As discussed in the Hudson Tunnel DEIS, although there is the potential for significant adverse air quality impacts in accordance with the New York City impact criteria, the maximum predicted total concentrations are predicted to be lower than the corresponding NAAQS and therefore, construction associated with the Hudson Tunnel Project would not result in any significant adverse air quality impacts under the Federal impact criteria. As discussed above, during this time period, the proposed project sites are both anticipated to be in the superstructure stage of construction when emissions are anticipated to be well below the most intense periods of construction activities (i.e., excavation and foundation stages) analyzed. Since the most intensive construction activities for the Hudson Tunnel Project and the proposed projects are not expected to occur simultaneously, maximum concentrations are not anticipated to be combined. Furthermore, maximum modeled concentrations from the construction of the proposed actions and the construction of the Hudson Tunnel Project would not occur in the same location. Therefore, the pollutant concentrations from construction activities at nearby receptor locations would be attributed to either the Hudson Tunnel Project as disclosed in the Hudson Tunnel DEIS or by the proposed actions and would not alter the conclusions presented in the Hudson Tunnel DEIS or this ~~D~~EIS.

Based on the conceptual construction schedule presented in the Hudson Tunnel DEIS, the most noise intensive periods of construction activity from the Hudson Tunnel Project (i.e., pile driving associated with the Twelfth Avenue shaft and 30th Street work) would occur between December 2019 and April 2020 and between September 2020 and March 2021. Since the proposed projects are anticipated to be in quieter stages of construction cumulative peak construction noise levels from the proposed projects and the Hudson Tunnel Project experienced at the receptors surrounding the proposed projects would be negligible. Therefore, taking into consideration the Hudson Tunnel Project, there would be no additional significant adverse noise impacts from construction activities or additional mitigation measures needed.

B. GOVERNMENTAL COORDINATION AND OVERSIGHT

Construction oversight involves several City, state, and federal agencies. **Table 20-1** lists the primary involved agencies and their areas of responsibility. For projects in NYC, primary construction oversight lies with DOB, which oversees compliance with the NYC Building Code. In addition, DOB enforces safety regulations to protect workers and the general public during construction. The areas of oversight include installation and operation of equipment such as cranes, sidewalk bridges, safety netting, and scaffolding. DEP enforces the *NYC Noise Code* and regulates water disposal into the sewer system. OER reviews and approves any needed Remedial Action Plans (RAPs) and abatement of hazardous materials. The NYC Fire Department (FDNY) has primary oversight of compliance with the *NYC Fire Code* and the installation of tanks containing flammable materials. The NYC Department of Transportation (DOT) Office of Construction Mitigation and Coordination (OCMC) reviews and approves any traffic lane and sidewalk closures. New York City Transit (NYCT) is responsible for bus stop relocations, if necessary. LPC, approves the historic and cultural resources analysis, the CPP, and monitoring measures established to prevent damage to historic structures.

Table 20-1
Summary of Primary Agency Construction Oversight

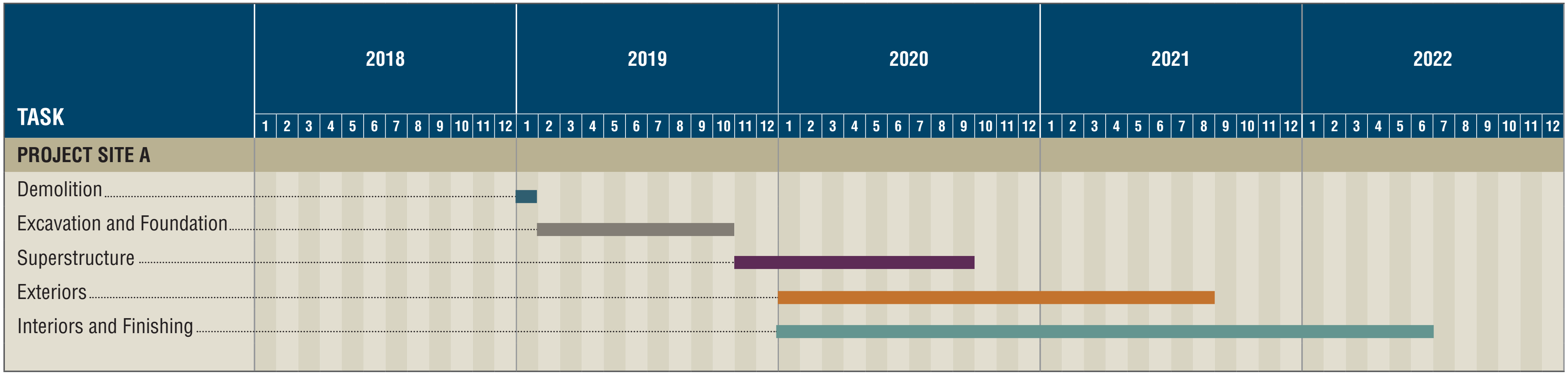
Agency	Areas of Responsibility
New York City	
Department of Buildings	Building Code and site safety
Department of Environmental Protection	Noise Code, dewatering discharge
Office of Environmental Remediation	RAPs and hazardous materials abatement
Fire Department	Compliance with Fire Code, fuel tank installation
Department of Transportation	Lane and sidewalk closures
New York City Transit	Bus stop relocation
Landmarks Preservation Commission	Construction Protection Plan
New York State	
Department of Labor	Asbestos Workers
Department of Environmental Conservation	Hazardous materials and fuel/chemical storage tanks
United States	
Environmental Protection Agency	Air emissions, noise, hazardous materials, poisons
Occupational Safety and Health Administration	Worker safety

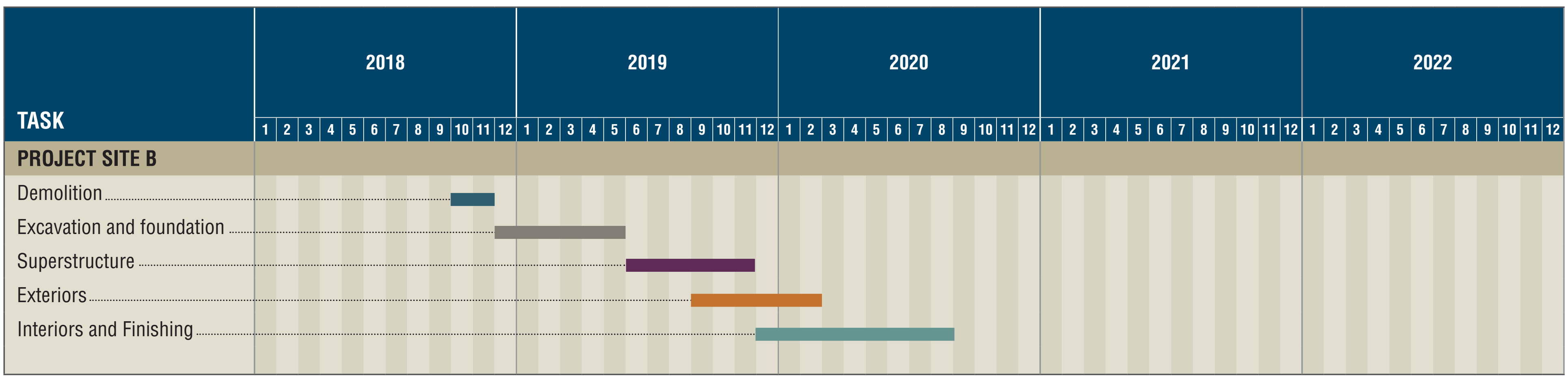
At the state level, the New York State (NYS) Department of Labor (DOL) licenses asbestos workers. The NYS Department of Environmental Conservation (DEC) regulates disposal of hazardous materials, and construction, operation, and removal of bulk petroleum and chemical storage tanks. At the federal level, although the United States Environmental Protection Agency (EPA) has wide-ranging authority over environmental matters, including air emissions, noise, hazardous materials much of its responsibility is delegated to the state level. The Occupational Safety and Health Administration (OSHA) sets standards for work site safety and construction equipment.

C. CONSTRUCTION PHASING AND SCHEDULE

Figure 20-1 and **Table 20-2** present a conceptual schedule of construction for the proposed buildings. In the conceptual construction schedule, construction is assumed to begin in 2019. However, due to the conservative nature of this conceptual schedule, construction may start at a later time. The construction of project sites A and B would take 42 and 23 months, respectively, and would completely overlap with each other. If the proposed actions are approved, construction of the Project Area would be completed in 2022. The analyses conservatively account for overlapping construction activities to capture the cumulative nature of construction impacts.

7.18.17





Sources: Project Site A: DD West 29th Street LLC
Project Site B: West 30th Street LLC

BLOCK 675 EAST

Conceptual Construction Schedules
Figure 20-1

Table 20-2
Conceptual Construction Schedules

Project Site	Task	Start Month	Finish Month	Approximate duration (months)
Project Site A	Demolition and Abatement	Jan 2019	Feb 2019	1
	Excavation and Foundation	Feb 2019	Oct 2019	9
	Superstructure	Nov 2019	Sept 2020	11
	Exteriors	Jan 2020	Aug 2021	20
	Interiors and Finishing	Jan 2020	May 2022	29
	All Construction Tasks	**Jan 2019**	**May 2022**	**42**
Project Site B	Demolition	Oct 2018	Nov 2018	2
	Excavation and Foundation	Dec 2018	May 2019	6
	Superstructure	Jun 2019	Nov 2019	6
	Exteriors	Sept 2019	Feb 2020	6
	Interiors and Finishing	Dec 2019	Aug 2020	9
	All Construction Tasks	**Oct 2018**	**Aug 2020**	**23**

Sources:
Project Site A: DD West 29th Street, LLC.
Project Site B: West 30th Street, LLC.

D. CONSTRUCTION DESCRIPTION

OVERVIEW

Construction of buildings generally proceeds in the following stages. The first task is construction startup, which involves the siting of work trailers, installation of temporary power and communication lines, and the erection of site perimeter fencing. Then, if there is an existing building on the site, any potential hazardous materials (such as asbestos) are abated, and the building is then demolished with some of the materials recycled and the debris taken to a licensed disposal facility. Excavation and removal of the soils is next, followed by construction of the foundations. When the below-grade construction is completed, construction of the superstructure and exteriors of the new building begins. The superstructure is the core part of the building and is the main part of the structural system. It contains the elevators and the mechanical systems for heating, ventilation, and air conditioning (HVAC). The exteriors are the outside of the building. As the core and floor decks of the building are being erected, installation of the mechanical and electrical internal networks would start. As the building progresses upward, the exterior cladding is placed, and the interior fit out begins. During the busiest time of building construction, the upper core and structure is being built while mechanical/electrical connections, exterior cladding, and interior finishing are progressing on lower floors.

GENERAL CONSTRUCTION PRACTICES

DELIVERIES AND ACCESS

Trucks transporting materials to and from the construction sites would be controlled to minimize unscheduled deliveries. The work areas would be fenced off, and limited access points for workers and trucks would be provided. Private worker vehicles would generally not be allowed into the construction area. Security guards and flaggers may be posted as necessary. Workers or trucks without a need to be on the construction site would not be allowed entry. After work hours, the gates would be closed and locked.

HOURS OF WORK

Construction activities would take place in accordance with NYC laws and regulations, which allow construction to take place between 7:00 AM and 6:00 PM. Construction work would begin at 7:00 AM on weekdays, with most workers arriving between 6:00 AM and 7:00 AM. Typically, work would end at 3:00 or 3:30 PM, but could be extended until 6:00 PM for such tasks as finishing a concrete pour for a floor deck, or completing the bolting of a steel frame erected that day. Extended workday activities would not include all construction workers on site, but only those involved in the specific task. Limited extended workdays could occur on weekdays over the course of construction.

At limited times over the course of constructing a building, night and/or weekend work may be required for certain construction activities such as the erection of the tower crane and to make up for weather delays. In such cases, the numbers of workers and pieces of equipment in operation would be limited to those needed to complete the particular authorized task. Therefore, the level of activity for any night and weekend work would be less than a normal workday. The typical weekend workday would be on Saturday.

SIDEWALK AND LANE CLOSURES

During the course of construction, traffic lanes, and sidewalks immediately adjacent to the project sties may be closed or protected for varying periods of time. Some street lanes and sidewalks may be continuously closed, and some lanes and sidewalks may be closed only intermittently to allow for certain construction activities. Maintenance and Protection of Traffic (MPT) plans would be developed for any temporary curb-lane and sidewalk narrowing/closures as required by DOT. This work would be coordinated with and approved by DOT’s OCMC. Measures specified in the MPT plans typically include: closure of the curbside lane; safety signs; safety barriers; and construction fencing.

PUBLIC SAFETY

A variety of measures would be employed to ensure public safety during the construction for the proposed actions. These include a sidewalk bridge to be erected during above-grade construction activities to provide overhead protection for pedestrians. Construction safety signs would be posted to alert the public of ongoing construction activities. Flaggers would be posted as necessary to control trucks entering and exiting the construction area, to provide guidance to pedestrians, and/or to alert or slow down the traffic. The installation and operation of tower cranes would follow stringent DOB requirements to ensure safe operation of the equipment. Safety netting would be installed during demolition and on the sides of the proposed buildings as the superstructures advances upward to prevent debris from falling to the ground. All DOB safety requirements would be followed and construction of the proposed buildings would be undertaken as to minimize the disruption to the community.

RODENT CONTROL

Construction contracts may include provisions for a rodent (i.e., mouse and rat) control program. Before the start of construction, the contractor would survey and bait the appropriate areas and provide for proper site sanitation. During construction, the contractor would carry out a maintenance program, as necessary. Signage would be posted, and coordination would be conducted with appropriate public agencies.

GENERAL CONSTRUCTION TASKS

Construction activities at each of the sites would consist of the following primary stages, which may overlap at certain times: startup; demolition; excavation and foundation; superstructure; exteriors; site work; and interiors and finishing. These construction stages are described in greater detail in this section.

CONSTRUCTION STARTUP TASKS

Startup work generally involves the installation of public safety measures, such as fencing, sidewalk sheds, and safety barriers. The site is fenced off, typically with solid fencing to minimize interference between the persons passing by the site and the construction work. Separate gates for workers and for trucks are installed, and sidewalk shed and safety barriers are erected. Trailers for the construction engineers and managers are brought on to the site and installed. These trailers could be placed within the fence line or in curb lane. Also, portable toilets, dumpsters for trash, and water and fuel tankers are brought to the site and installed. During the startup period, permanent utility connections may be made, especially if the contractor has obtained early electric power for construction use, but utility connections may be made almost any time during the construction sequence. Construction startup tasks are normally completed within weeks.

DEMOLITION

The proposed actions would result in the demolition and existing buildings at project site A, and project site B, and potentially Lot 38 prior to the construction of the new buildings. Asbestos abatement and removal of any other hazardous materials within the existing buildings and structures would occur before demolition.

A NYC-certified asbestos investigator would inspect the buildings for asbestos-containing materials (ACMs), and those materials must be removed by a NYCDOL-licensed asbestos abatement contractor prior to interior demolition. Asbestos abatement is strictly regulated by DEP, NYCDOL, EPA, and OSHA to protect the health and safety of construction workers and nearby residents and workers. Depending on the extent and type of ACMs, these agencies would be notified of the asbestos removal project and may inspect the abatement site to ensure that work is being performed in accordance with applicable regulations. These regulations specify abatement methods, including wet removal of ACMs that minimize asbestos fibers from becoming airborne, and containment measures. Specially trained and certified workers, wearing personal protective equipment, would remove the ACMs and place them in bags or containers lined with plastic sheeting for disposal at an asbestos-permitted landfill. Depending on the extent and type of ACMs, an independent third-party air-monitoring firm would collect air samples before, during, and after the asbestos abatement. These samples would be analyzed in a laboratory to ensure that regulated fiber levels are not exceeded. After the abatement is completed and the work areas have passed a visual inspection and monitoring, if applicable, the general demolition work can begin.

Any activities with the potential to disturb lead-based paint would be performed in accordance with the applicable OSHA regulation (OSHA 29 CFR 1926.62—*Lead Exposure in Construction*). When conducting demolition (unlike lead abatement work), LBP is generally not stripped from surfaces. Structures may be disassembled or broken apart with most paint still intact. Dust control measures (spraying with water) would be used if necessary. The lead content of any resulting dust is therefore expected to be low. Work zone air monitoring for lead may be performed during certain activities with a high potential for releasing airborne lead-containing particulates in the immediate work zone, such as manual demolition of walls with lead paint or cutting of steel with lead-containing coatings. Such monitoring would be performed to ensure that workers performing these activities are properly protected against lead exposure.

Any suspected PCB-containing equipment (such as fluorescent light ballasts) that would be disturbed would be evaluated prior to disturbance. Unless labeling or test data indicate that the suspected PCB-containing equipment does not contain PCBs, it would be assumed to contain PCBs and removed and disposed of at properly licensed facilities in accordance with all applicable regulatory requirements.

General demolition is the next step, where necessary. Demolition would occur in accordance with DOB guidelines/requirements. In general, the first step is to remove any economically salvageable materials. Then the building is deconstructed using large equipment such as excavators with hoe rams. Typical demolition requires fencing and netting around the building to prevent accidental dispersal of building materials into areas accessible to the general public. The demolition debris would be sorted prior to being disposed at landfills to maximize recycling opportunities. The general demolition phase is expected to last one to two months per site.

EXCAVATION AND FOUNDATION

Excavators would be used for the task of digging foundations. The soil would be loaded onto dump trucks for transport to a licensed disposal facility or for reuse on another construction site. Foundation work could include pile driving and pouring concrete footings and foundation. The excavation/foundation task could involve the use of excavators, cranes, pile drivers or drill rigs, concrete pumps, concrete trucks, generators, and hand tools. Excavation and foundation activities for project sites A and B are anticipated to take approximately 9 months and 6 months to complete, respectively.

Below-Grade Hazardous Materials

All construction subsurface soil disturbances would be performed in accordance with an OER-approved RAP. At a minimum, the RAP would provide for the appropriate handling, stockpiling, testing, transportation, and disposal of excavated materials, as well as any unexpectedly encountered tanks, in accordance with all applicable federal, state, and local regulatory requirements. The RAP would also provide for vapor control measures such as vapor barriers.

Dewatering

The excavated area could be subject to accumulating groundwater until the slab-on-grade is built. In addition to groundwater, rain and snow could collect in the excavation, and that water would have to be removed. If necessary, the water would be pretreated prior to discharge. The decanted water would then be discharged into the NYC sewer system. Discharge in the sewer system is governed by DEP regulations.

SUPERSTRUCTURE

The superstructures for the proposed buildings would include the buildings’ frameworks such as beams, slabs, and columns. Construction of the interior structure, or core, of the proposed buildings would include elevator shafts; vertical risers for mechanical, electrical, and plumbing systems; electrical and mechanical equipment rooms; core stairs; and restroom areas. These activities would require the use of cranes, delivery trucks, concrete pumps, concrete trowels, welding equipment, and a variety of handheld tools. Temporary construction elevators (hoists) would also be constructed for the delivery of materials and vertical movement of workers during this stage where necessary. Superstructure activities for project sites A and B are anticipated to take approximately 11 months and 6 months to complete, respectively.

EXTERIORS

The exterior façades of the proposed buildings would be installed during this stage of construction. The pre-assembled façade pieces would arrive on trucks and be lifted into place for attachment by the tower crane. Exteriors activities for project sites A and B are anticipated to take approximately 20 months and 6 months to complete, respectively.

INTERIORS AND FINISHING

This stage would include the construction of interior partitions, installation of lighting fixtures, interior finishes (flooring, painting, etc.), and mechanical and electrical work, such as the installation of elevators. This activity would employ the greatest number of construction workers. Equipment used during interior construction would include hoists, delivery trucks, and a variety of small hand-held tools. However, this stage of construction is typically the quietest since most of the activities would occur within an enclosed building. Interiors and finishing activities for project sites A and B are anticipated to take approximately 29 months and 9 months to complete, respectively.

NUMBER OF CONSTRUCTION WORKERS AND MATERIAL DELIVERIES

Tables 20-3 and 20-4 shows the estimated average daily numbers of workers and deliveries by calendar quarter for the duration of the construction of project site A and project site B, respectively. In order to assess the worst-case traffic conditions, the worst case time period of project site A (the third quarter of Year 2) is assumed to occur simultaneously with the worst case time period of project site B (the first quarter of Year 2). This would result in an estimate of 463 daily workers and 23 daily truck trips for project site A and 133 daily workers and 16 daily truck trips for project site B, for a total of 596 daily workers and 39 daily truck trips during the peak construction quarter. The average number of workers for project site A would be approximately 292 per day and the average number of workers for project site B would be approximately 79 per day. The average number of daily truck trips would be approximately 11 for project site A and 10 for project site B. As shown in **Tables 20-3 and 20-4**, the peak level of construction workers and trucks would not persist throughout the entire construction period. During non-peak periods of construction, the number of construction workers and trucks would be less, and sometimes much less, than those estimated for the peak period.

Table 20-3
Average Number of Daily Construction Workers and Trucks by Year and Quarter
Proposed Actions – Project Site A

Year	Year 1				Year 2				Year 3				Year 4			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	80	90	110	193	368	405	463	405	405	402	375	335	285	177	-	-
Trucks	8	13	10	9	24	26	23	8	8	8	7	6	5	2	-	-
	Peak[1]				Average											
Workers	463				292											
Trucks	23				11											

Note: [1] Analysis assumes that the peak number of construction vehicle trips for project sites A and B would occur simultaneously.
Source: DD West 29th Street

Table 20-4
Average Number of Daily Construction Workers and Trucks by Year and Quarter
Proposed Actions – Project Site B

Year	Year 1				Year 2			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Workers	15	18	57	127	133	113	100	67
Trucks	7	10	12	16	16	10	8	5
	Peak[1]				Average			
Workers	133				79			
Trucks	16				10			

Note: [1] Analysis assumes that the peak number of construction vehicle trips for project sites A and B would occur simultaneously.
Source: West 30th Street LLC

E. THE FUTURE WITHOUT THE PROPOSED ACTIONS

In the future without the proposed actions (No Action condition), it is expected that existing uses within the Project Area would remain.

The Port Authority of New York and New Jersey (PANYNJ), New Jersey (NJ) TRANSIT, and Amtrak recently announced plans for the Hudson Tunnel Project. The Hudson Tunnel Project schedule calls for issuance of a Draft Environmental Impact Statement (DEIS) in 2017, start of construction in 2019, and completion of the project in 2026. As part of the Hudson Tunnel Project, the new tunnel would cross under Block 675, Lot 1 and include a ventilation structure on the west end of the project block (not on the Project Area). Construction activities associated with the Hudson Tunnel Project would occur regardless of the proposed actions and are described, as appropriate in the relevant technical areas below. Based on information provided in the Hudson Tunnel DEIS, the potential effect of both proposed actions are discussed in “Probably Impacts of the Proposed Actions.”

F. PROBABLE IMPACTS OF THE PROPOSED ACTIONS

Similar to many large development projects in NYC, construction can cause temporary disruption to the surrounding area throughout the construction period. The following analyses describe potential construction impacts on transportation, air quality, noise and vibration, as well as other technical areas including historic and cultural resources, hazardous materials, open space, socioeconomic conditions, community facilities, and land use and neighborhood character.

TRANSPORTATION

The construction transportation analysis assesses the potential for construction activities to result in significant adverse impacts to traffic, parking conditions, transit facilities, and pedestrian elements. The analysis is based on the peak worker and truck trips during construction under the proposed actions, which are developed based on several factors including worker modal splits, vehicle occupancy and trip distribution, truck passenger car equivalents (PCEs), and arrival/departure patterns. For the proposed actions, the combined peak-construction, worker-vehicle and truck-trip generation would occur during superstructure, exteriors, interiors, and finishing construction activities; the greatest construction-related parking, transit, and pedestrian demand would occur during exterior and interior construction activities.

For the reasonable worst-case traffic assumption, the peak number of construction vehicle trips for project sites A and B would occur simultaneously. The following sections evaluate the potential for the proposed actions' peak construction worker and truck trips to result in significant adverse impacts to traffic, parking, transit facilities, and pedestrian elements.

TRAFFIC

An evaluation of construction sequencing and worker/truck projections was undertaken to assess potential traffic impacts.

Construction Trip Generation Projections

The average worker and truck trip projections (discussed above in "Number of Construction Workers and Materials Deliveries") were further refined to account for worker modal splits and vehicle occupancy, arrival and departure distribution, and truck PCEs.

Daily Workforce and Truck Deliveries

For a reasonable worst-case analysis of potential transportation-related impacts during construction, the daily workforce and truck trip projections in the peak quarter were used as the basis for estimating peak-hour construction trips. Based on inputs from project construction managers, construction activities would be expected to generate the highest amount of daily traffic during superstructure, exteriors, interiors, and finishing activities, with a peak of approximately 596 workers and 39 truck deliveries per day. These estimates of construction activities are discussed further below.

Construction Worker Modal Splits and Vehicle Occupancy

Based on the latest available U.S. Census data (2000 Census data) for workers in the construction and excavation industry, it is anticipated that 41 percent of construction workers would commute to the project sites by private autos at an average occupancy of approximately 1.17 persons per vehicle.

Peak-Hour, Construction Worker Vehicle, and Truck Trips

Similar to other construction projects in New York City, most of the construction activities at the development site are expected to take place between 7:00 AM and 3:30 PM. While construction truck trips would occur throughout the day (with more trips during the early morning), and most trucks would remain in the area for short durations, construction workers would commute during the hours before and after the work shift. For analysis purposes, each truck delivery was assumed to result in two truck trips during the same hour (one "in" and one "out"), whereas each worker vehicle was assumed to arrive near the work shift start hour and depart near the work shift end hour. Further, in accordance with the *CEQR Technical Manual*, the traffic analysis assumed that each truck has a PCE of 2.

The estimated daily vehicle trips were distributed throughout the workday based on projected work shift allocations and conventional arrival/departure patterns for construction workers and trucks. For construction workers, the majority (approximately 80 percent) of the arrival and departure trips would take place during the hour before and after each work shift (6:00 AM to 7:00 AM for arrival and 3:30 PM to 4:30 PM for departure on a regular day shift). Construction truck deliveries typically peak during the hour before each shift (25 percent), overlapping with construction worker arrival traffic. **Table 20-5** presents the hourly trip projections for the peak construction quarter. As shown, the maximum construction-related traffic increments would be approximately 207 PCEs between 6:00 AM and 7:00 AM and 175 PCEs between 3:00 PM and 4:00 PM.

Table 20-5
Peak Construction Vehicle Trip Projections
Proposed Actions

	Auto Trips			Truck Trips			Total					
	Regular Shift			Regular Shift			Vehicle Trips			PCE Trips		
Hour	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
6 AM–7 AM	167	0	167	10	10	20	177	10	187	187	20	207
7 AM–8 AM	41	0	41	4	4	8	45	4	49	49	8	57
8 AM–9 AM	0	0	0	4	4	8	4	4	8	8	8	16
9 AM–10 AM	0	0	0	4	4	8	4	4	8	8	8	16
10 AM–11 AM	0	0	0	3	3	6	3	3	6	6	6	12
11 AM–12 PM	0	0	0	3	3	6	3	3	6	6	6	12
12 PM–1 PM	0	0	0	3	3	6	3	3	6	6	6	12
1 PM–2 PM	0	0	0	3	3	6	3	3	6	6	6	12
2 PM–3 PM	0	10	10	3	3	6	3	13	16	6	16	22
3 PM–4 PM	0	167	167	2	2	4	2	169	171	4	171	175
4 PM–5 PM	0	31	31	0	0	0	0	31	31	0	31	31
Daily Total	208	208	416	39	39	78	247	247	494	286	286	572

Note: Hourly construction worker and truck trips were derived from an estimated quarterly average number of construction workers and truck deliveries per day, with each truck delivery resulting in two daily trips (arrival and departure).

As shown in **Table 20-5**, the incremental trips generated by the proposed actions would be 207 and 175 vehicle trips during the 6:00 to 7:00 AM and 3:00 to 4:00 PM peak hours, respectively. Since the incremental vehicle trips would be greater than 50 vehicles, as well as the incremental trips in the operation analysis presented in Chapter 14, “Transportation,” a Level 2 screening assessment was conducted to determine if a quantified traffic analysis is warranted. These vehicle trips were assigned to the surrounding roadway network based on the most likely travel routes to and from the project site, prevailing travel patterns, commuter origin-destination (O-D) summaries from the census data, the configuration of the roadway network, the anticipated locations of site access and egress, and nearby land use and population characteristics.

As presented in **Table 20-6**, two intersections during the construction AM peak hour would incur incremental vehicle trips exceeding the CEQR threshold. However, the incremental construction vehicle trips at both intersections would be comparable to those that would occur in the full build-out of the proposed actions.

Table 20-6
Traffic Level 2 Screening Analysis Results
With Action Incremental Vehicle Trips in PCEs

Intersection	Construction AM	Construction PM
Twelfth Avenue and West 30th Street	**66**	23
Twelfth Avenue and West 29th Street	31	38
Twelfth Avenue and West 28th Street	17	17
Eleventh Avenue and West 30th Street	**61**	4
Eleventh Avenue and West 29th Street	24	40
Eleventh Avenue and West 28th Street	10	2
Tenth Avenue and West 30th Street	0	46
Tenth Avenue and West 29th Street	43	2
Tenth Avenue and West 28th Street	6	2

Note: Bold numbers indicate 50 or more incremental vehicle trips.

Since specific travel patterns would vary between operational and construction-related trip-making, a quantified analysis is presented below for these two intersections—Route 9A/Twelfth Avenue intersections with West 30th and West 29th Streets.

Detailed Construction Traffic Analysis

As described above, two traffic analysis locations have been selected for detailed analysis of the 6:00 AM to 7:00 AM peak hour. These locations are the Twelfth Avenue intersections at West 30th and 29th Streets, which as presented in Chapter 14, "Transportation," would incur significant adverse traffic impacts in the With Action condition. Both of these intersections are signalized.

Existing Conditions

Traffic data were collected June 2016 and October 2017, via a combination of manual intersection counts and 24-hour Automatic Traffic Recorder (ATR) counts. Existing construction peak hour (6:00 AM to 7:00 AM) traffic volumes were developed based on these counts.

A summary of the existing conditions construction traffic analysis results is presented in **Table 20-7**. Details on LOS, v/c ratios, and average delays are presented in **Table 20-8**. The capacity analysis indicates that most of the approaches/lane groups at the two intersections operate acceptably—at mid-LOS D or better (delays of 45 seconds or less per vehicle for the study area's signalized intersections). Approaches/lane groups operating beyond mid-LOS D and those with v/c ratios of 0.90 or greater are listed below.

Table 20-7
Summary of Existing Construction Traffic Analysis Results

Level of Service	Weekday AM (6:00 AM to 7:00 AM)
Lane Groups at LOS A/B/C	4
Lane Groups at LOS D	1
Lane Groups at LOS E	1
Lane Groups at LOS F	1
Total	7
Lane Groups with v/c ≥ 0.90	1

Notes: LOS = Level-of-Service; v/c = volume-to-capacity ratio.

Table 20-8
Existing Conditions Level of Service Analysis
Weekday Construction AM Peak Hour

Intersection	Existing			
	Lane Group	v/c Ratio	Delay (sec)	LOS
Route 9A/Twelfth Avenue and West 30th Street				
Northbound	TR	0.64	15.5	B
Southbound	L	1.05	140.1	F
	T	0.76	18.8	B
Route 9A/Twelfth Avenue and West 29th Street				
Westbound	L	0.19	54.8	D
	R	0.53	64.7	E
Northbound	T	0.54	8.6	A
Southbound	T	0.68	10.9	B

Notes: L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn, LOS = Level of Service

- Southbound left-turn at the Twelfth Avenue and West 30th Street intersection (LOS F with a v/c ratio of 1.05 and a delay of 140.1 seconds per vehicle [spv]); and
- Westbound right-turn at the Twelfth Avenue and West 29th Street intersection (LOS E with a v/c ratio of 0.53 and a delay of 64.7 spv).

The Future without the Proposed Actions

The No Action construction traffic condition was developed by increasing the existing traffic levels by the expected growth in overall travel through and within the study area. As per *CEQR Technical Manual* guidelines, an annual background growth rate of 0.25 percent was applied to grow traffic to the proposed projects' anticipated peak construction period which would occur during the third quarter of 2019. A total of 37 development projects expected to occur in the No Action condition (No Build projects) were identified as being planned for the ½-mile study area (see Figure 14-13 and Table 14-17 in Chapter 14, "Transportation"). As compared to the commuter peak hour (i.e. 8:00 AM to 9:00 AM), trip generation for these projects would be lower during the construction peak analysis hour of 6:00 AM to 7:00 AM. As typically done in other recently approved EISs, the estimated operational peak hour trips for these No Build projects were prorated based on the study area ATR data collected to arrive at the estimated construction peak hour trips. In addition, construction worker and truck trip estimates for the Hudson Tunnel project were incorporated into the No Action construction traffic analysis.

A summary of the No Action condition construction traffic analysis results is presented in **Table 20-9**. Details on LOS, v/c ratios, and average delays are presented in **Table 20-10**. The analysis results show that the majority of the approaches/lane-groups will operate at the same LOS as in the existing conditions or within acceptable mid-LOS D or better (delay of 45 seconds or less per vehicle for signalized intersections). The only exception is the westbound left-turn at the Route 9A/Twelfth Avenue and West 29th Street intersection where operations will deteriorate to LOS E with a v/c ratio of 0.26 and a delay of 56.3 spv.

Table 20-9
Summary of No Action Construction Traffic Analysis Results

Level of Service	Weekday AM (6:00 AM to 7:00 AM)
Lane Groups at LOS A/B/C	4
Lane Groups at LOS D	0
Lane Groups at LOS E	2
Lane Groups at LOS F	1
Total	7
Lane Groups with v/c ≥ 0.90	1

Notes: LOS = Level-of-Service; v/c = volume-to-capacity ratio.

Table 20-10
Existing and No Action Conditions Level of Service Analysis
Weekday Construction AM Peak Hour

	Existing				No Action			
Intersection	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS
Route 9A/Twelfth Avenue and West 30th Street								
Northbound	TR	0.64	15.5	B	TR	0.65	15.7	B
Southbound	L	1.05	140.1	F	L	1.07	147.0	F
	T	0.76	18.8	B	T	0.79	19.8	B
Route 9A/Twelfth Avenue and West 29th Street								
Westbound	L	0.19	54.8	D	L	0.26	56.3	E
	R	0.53	64.7	E	R	0.55	65.4	E
Northbound	T	0.54	8.6	A	T	0.54	8.6	A
Southbound	T	0.68	10.9	B	T	0.70	11.5	B

Notes: L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn, LOS = Level of Service

The Future with the Proposed Actions

Overall, peak construction of the proposed actions would result in approximately 187 construction-related vehicle trip increments between 6:00 AM and 7:00 AM. The incremental worker auto trips were assigned to the nearby off-street parking facilities available within a ¼-mile of the project sites. All delivery trips were assigned to the project sites via NYCDOT designated truck routes.

The With Action construction condition traffic volumes were constructed by layering on top of the No Action construction condition traffic volumes the incremental vehicle trips generated by construction activities associated with the proposed actions. A summary of the With Action construction condition traffic analysis results is presented in **Table 20-11**.

Details on level-of-service, volume-to-capacity (v/c) ratios, and average delays are presented in **Table 20-12**. As discussed below, a significant adverse construction traffic impact is predicted to occur at one approach/lane-group at the intersection of Route 9A/Twelfth Avenue and West 30th Street during the weekday 6:00 AM to 7:00 AM construction peak hour.

- The southbound left-turn at the Route 9A/Twelfth Avenue and West 30th Street intersection would deteriorate within LOS F (from a v/c ratio of 1.07 and 147.0 spv of delay to a v/c ratio of 1.25 and 209.3 spv of delay), an increase in delay of more than 3 seconds, during the weekday 6:00 AM to 7:00 AM peak hour. This projected increase in delay constitutes a significant adverse impact.

Table 20-11
Summary of With Action Construction Traffic Analysis Results

Level of Service	Weekday AM (6:00 AM to 7:00 AM)
Lane Groups at LOS A/B/C	4
Lane Groups at LOS D	0
Lane Groups at LOS E	2
Lane Groups at LOS F	1
Total	7
Lane Groups with v/c ≥ 0.90	1
Notes: LOS = Level-of-Service; v/c = volume-to-capacity ratio.	

Table 20-12
No Action and With Action Conditions Level of Service Analysis
Weekday Construction AM Peak Hour

Intersection	No Action				With Action				
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS	
Route 9A/Twelfth Avenue and West 30th Street									
Northbound	TR	0.65	15.7	B	TR	0.66	15.9	B	
Southbound	L	1.07	147.0	F	L	1.25	209.3	F	+
	T	0.79	19.8	B	T	0.79	19.8	B	
Route 9A/Twelfth Avenue and West 29th Street									
Westbound	L	0.26	56.3	E	L	0.26	56.3	E	
	R	0.55	65.4	E	R	0.62	69.0	E	
Northbound	T	0.54	8.6	A	T	0.55	8.7	A	
Southbound	T	0.70	11.5	B	T	0.70	11.5	B	

Notes: L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn, LOS = Level of Service
+ Denotes a significant adverse traffic impact

Mitigation of Significant Adverse Construction Traffic Impacts

As discussed above, the analysis of the weekday 6:00 AM to 7:00 AM construction peak hour for peak construction during the third quarter of 2019 identified the potential for a significant adverse traffic impact at the intersection of Route 9A/Twelfth Avenue and West 30th Street. **Table 20-13** details the recommended mitigation measure (i.e., shifting 3 seconds of green time from the northbound/southbound phase to the southbound left-turn phase) that would address the identified impact. **Table 20-14** compares the levels of service and lane group delays for the impacted intersection under the No Action, With Action, and Mitigation construction conditions for the 6:00 AM to 7:00 AM peak hour.

Table 20-13
Recommended Mitigation Measures
Weekday Construction AM Peak Hour

Intersection	No Action Signal Timing	Recommended Mitigation Measures	Recommended Signal Timing
Route 9A/Twelfth Avenue and West 30th Street	EB: Green = 14 s NB/SB: Green = 100 s SB-L: Green = 19 s	Shift 3 second of green time from the NB/SB phase to the SB left-turn phase.	EB: Green = 14 s NB/SB: Green = 97 s SB-L: Green = 22 s

Notes:
L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn, EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound.

Table 20-14
No Action, With Action, and Mitigation Conditions Level of Service Analysis
Weekday Construction AM Peak Hour

Intersection	Weekday AM												
	No Action				With Action					Mitigation			
	Lane Group	v/c Ratio	Delay (sec)	LOS	Lane Group	v/c Ratio	Delay (sec)	LOS		Lane Group	v/c Ratio	Delay (sec)	LOS
Route 9A/Twelfth Avenue and West 30th Street													
Northbound	TR	0.65	15.7	B	TR	0.66	15.9	B		TR	0.68	17.9	B
Southbound	L	1.07	147.0	F	L	1.25	209.3	F	+	L	1.08	144.6	F
	T	0.79	19.8	B	T	0.79	19.8	B		T	0.81	22.5	C

Notes:
L = Left Turn, T = Through, R = Right Turn, DefL = Defacto Left Turn, LOS = Level of Service
+ Denotes a significant adverse traffic impact

PARKING

As shown in **Tables 20-3 and 20-4**, the peak number of workers during construction for the proposed actions would be approximately 596 per day. Based on 2000 U.S. Census data on workers in the construction and excavation industry, it is anticipated that 41 percent of construction workers would commute to the Project Area by private autos at an average occupancy of approximately 1.17 persons per vehicle. The anticipated construction activities are therefore projected to generate a maximum parking demand of 209 spaces. Based on the parking analysis presented in Chapter 14, "Transportation," although there are currently 244 spaces available during the weekday midday peak period, there is expected to be, under the future 2022 No Action condition, a parking shortfall of 67 spaces during the same weekday midday peak period. During peak construction, the available parking supply is likely to fall between these two levels. Conservatively applying the parking utilization under the No Action condition, the construction worker demand of 209 spaces would result in a parking shortfall of 276 spaces during the weekday peak midday period. The excess construction parking demand, which is temporary in nature, would be accommodated on-street, to a small extent due to limited availability, or by off-street spaces and parking facilities available beyond a ¼-mile radius of the development sites. While there could be a temporary parking shortfall, as stated in the *CEQR Technical Manual*, a parking shortfall within Manhattan and other transit-rich areas of New York City generally does not constitute a significant adverse impact due to the variety of alternative modes of transportation that are available in these areas.

TRANSIT

As shown above in **Tables 20-3 and 20-4**, up to approximately 596 construction workers would travel to and from the project sites each day. Approximately 47 and 10 percent of these construction workers are expected to travel to and from the rezoning area by subway and bus, respectively. The Project Area is located in the vicinity of the newly constructed 34th Street–Hudson Yards (No. 7 train) Station, the 34th Street–Penn Station (A, C, and E, and No. 1, 2, and 3 trains) Station, and the 28th Street (No. 1 train) Station. Based on discussions with NYCT, it is expected that 85 percent of the project-generated subway trips would use the 34th Street-Hudson Yards Station, with the remaining 15 percent using the 34th Street-Penn Station and the 28th Street Station. This distribution would yield more than 200 incremental peak hour subway trips added to the 34th Street-Hudson Yards Station resulting from the proposed actions. However, this would fall below the peak person trips of 455 and 568 by subway on the same transit lines analyzed in the full build-out of the proposed actions during the weekday AM and PM peak hours, respectively. Therefore, any effects on transit that may occur during peak construction are expected to be similar to or less than the peak hour transit conditions for the With Action condition. Since no significant adverse impacts were identified for the With Action condition in Chapter 14, “Transportation,” the construction for the proposed actions would not result in any significant adverse transit impacts.

PEDESTRIANS

As summarized above, up to 596 average daily construction workers are projected in the 7:00 AM to 3:30 PM shift during peak construction for the proposed actions. With 80 percent of these workers arriving or departing during the construction peak hours (6:00 AM to 7:00 AM and 3:00 PM to 4:00 PM), the corresponding numbers of peak-hour pedestrian trips traversing the area’s sidewalks, corners, and crosswalks would be approximately 478, which is substantially lower than the peak person trips of 1,192 and 1,726 in the full build-out of the proposed actions during the weekday AM and PM peak hours, respectively (i.e., by approximately 60 percent). Furthermore, these trips would be spread over multiple entrances, several nearby transit services, and a number of area parking facilities, and therefore be distributed among numerous sidewalks and crosswalks in the area. While these construction worker pedestrian trips would primarily occur outside of the typical commuter peak hours (8 to 9 AM and 5 to 6 PM), during which background pedestrian volumes are relatively lower than those during commuter peak hours, there could still be a potential for significant adverse pedestrian impacts attributable to the projected construction worker pedestrian trips. However, these impacts, if they do occur, would be equal to or less than the corresponding operational impacts (east and south crosswalks of Eleventh Avenue and West 33rd Street) described in Chapter 14, “Transportation.” Accordingly, measures required to mitigate these impacts (i.e., restriping wider crosswalks), which can be advanced at DOT’s discretion prior to the completion of the proposed projects, would be equal to or less than those described in Chapter 21, “Mitigation.” In addition, sidewalk protection or temporary sidewalks would be provided in accordance with DOT requirements to maintain pedestrian access if needed.

CONSIDERATION OF THE HUDSON TUNNEL PROJECT

As discussed in Chapter 1, “Project Description,” the Hudson Tunnel Project is expected to start in 2019 with completion of the project expected in 2026. Construction activities would take place on the western portion of the project block immediately west of the Project Area. In addition, a portion of Lot 12 may be needed for Hudson Tunnel Project construction staging purposes between 2019 and 2026. The peak transportation period for project-generated worker and truck trips during the construction for the proposed actions would occur in 2020. During this period, construction for the Hudson Tunnel Project would be undergoing utility relocation, excavation, and cut and cover construction along West 30th Street. This would include Sequential Excavation Method (SEM) mining to construct the tunnel opening beneath northbound Twelfth Ave, construction of the access/ventilation shaft, excavation of West 30th Street, as well as relocating utilities at these locations.

The construction transportation analysis prepared for the Hudson Tunnel DEIS incorporated the operational trips projected for the Block 675 East proposed projects in the future construction background. This analysis subsequently concluded that the construction of the Hudson Tunnel Project would result in significant adverse impacts to nine intersections, a single sidewalk, a single corner area, and two crosswalk locations within the area.[3] As part of the construction of the Hudson Tunnel Project, changes to signal timing and widening sidewalks were proposed as mitigation measures within the Hudson Tunnel DEIS that would fully mitigate impacts at all but four intersections and one corner area. These locations where unmitigated impacts were identified in the Hudson Tunnel DEIS are not among the locations analyzed for the Block 675 East proposed projects given that the proposed projects are not anticipated to generate a significant number of trips at these locations. As stated above, peak construction trips associated with the development of the Block 675 East proposed projects would be comparable to the peak operational trips that would materialize upon the full build-out and occupancy of these projects. Hence, the Hudson Tunnel DEIS's construction transportation analysis, which accounted for these operational trips, provided a reasonable depiction of conditions during that project's peak construction since Block 675's peak construction would have occurred at an earlier point in time. During Block 675's peak construction, Hudson Tunnel's construction activities would not have reached its peak. Since peak construction of the Hudson Tunnel would be expected to yield fewer than 100 construction workers present on the Manhattan construction sites, its effects during peak Block 675 construction are expected to be even less (fewer than 30 peak hour worker vehicle trips, distributed among various travel corridors, including West Street, Eleventh Avenue, Tenth Avenue, West 23rd Street, and West 34th Street) and part of the typical background condition in the area surrounding the project sites.

AIR QUALITY

INTRODUCTION

Emissions from on-site construction equipment and on-road construction-related vehicles, and the effect of construction vehicles on background traffic congestion, have the potential to affect air quality. The analysis of potential impacts of the construction under the proposed actions on air quality includes a quantitative analysis of both on-site and on-road sources of air emissions, and the overall combined impact of both sources, where applicable.

In general, most construction engines are diesel-powered, and produce relatively high levels of nitrogen oxides (NO_x) and particulate matter (PM). Construction activities also emit fugitive dust. Although diesel engines emit much lower levels of carbon monoxide (CO) than gasoline engines, the stationary nature of construction emissions and the large quantity of engines could lead to

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[3] U.S. Department of Transportation Federal Railroad Administration and NJ TRANSIT. Hudson Tunnel Project Draft Environmental Impact Statement and Draft Section 4(f) Evaluation. Chapter 5A: Traffic and Pedestrians. Tables 5A-45 and 5A-48. June 2017.

elevated CO concentrations, and impacts on traffic could increase mobile source-related emissions of CO as well. Therefore, the pollutants analyzed for the construction period are nitrogen dioxide (NO_2), particles with an aerodynamic diameter of less than or equal to 10 micrometers (PM_{10}), particles with an aerodynamic diameter of less than or equal to 2.5 micrometers ($PM_{2.5}$), and CO. Since ULSD would be used for all diesel engines used in the construction of the proposed buildings, sulfur oxides (SO_x) emitted from those construction activities would be negligible. For more details on air pollutants, see Chapter 15, "Air Quality."

Construction activity in general has the potential to adversely affect air quality as a result of diesel emissions. At both project sites measures would be taken to reduce pollutant emissions during construction in accordance with all applicable laws, regulations, and building codes. These include clean fuel, dust suppression measures, and idling restrictions:

- *Clean Fuel.* ULSD[4] fuel would be used exclusively for all diesel engines throughout the construction site.
- *Dust Control Measures.* To minimize fugitive dust emissions from construction activities, a strict fugitive dust control plan including a robust watering program would be required as part of contract specifications. For example, stabilized truck exit areas would be established for washing off the wheels of all trucks that exit the construction sites; all trucks hauling loose material would be equipped with tight-fitting tailgates and their loads securely covered prior to leaving the development site; and water sprays will be used for all demolition, excavation, and transfer of soils to ensure that materials will be dampened as necessary to avoid the suspension of dust into the air. All measures required by the portion of the *NYC Air Pollution Control Code* regulating construction-related dust emissions will be implemented.
- *Idling Restriction.* In addition to adhering to the local law restricting unnecessary idling on roadways, on-site vehicle idle time will also be restricted to three minutes for all equipment and vehicles that are not using their engines to operate a loading, unloading, or processing device (e.g., concrete mixing trucks) or otherwise required for the proper operation of the engine.

In addition, both applicants have committed to implementing the following measures at their project sites to the extent practicable to further reduce air pollutant emissions during construction:

- *Diesel Equipment Reduction.* Electrically powered equipment would be preferred over diesel-powered and gasoline-powered versions of that equipment to the extent practicable. Equipment that would use the grid power in lieu of diesel engines includes, but may not be limited to, hoists that would be employed during construction, and small equipment such as welders.
- *Best Available Tailpipe Reduction Technologies.* Non-road diesel engines with a power rating of 50 horsepower (hp) or greater and controlled truck fleets (i.e., truck fleets under long-term contract with the project) including but not limited to concrete mixing and pumping trucks would utilize the best available tailpipe (BAT) technology for reducing diesel emissions. Diesel particulate filters (DPFs) have been identified as being the tailpipe technology currently proven to have the highest reduction capability. Construction contracts shall specify that all

[4] The Environmental Protection Agency (EPA) required a major reduction in the sulfur content of diesel fuel intended for use in locomotive, marine, and non-road engines and equipment, including construction equipment. As of 2015, the diesel fuel produced by all large refiners, small refiners, and importers must be ULSD; fuel sulfur levels in non-road diesel fuel are limited to a maximum of 15 parts per million.

diesel non-road engines rated at 50 hp or greater would utilize DPFs, either installed by the original equipment manufacturer (OEM) or retrofitted. Retrofitted DPFs must be verified by EPA or the California Air Resources Board (CARB). Active DPFs or other technologies proven to achieve an equivalent reduction may also be used.

- *Utilization of Newer Equipment.* EPA's Tier 1 through 4 standards for non-road engines regulate the emission of criteria pollutants from new engines, including PM, CO, NO_x, and hydrocarbons (HC). All non-road construction equipment with a power rating of 50 hp or greater would meet at least the Tier 3[5] emissions standard. All non-road engines in the project rated less than 50 hp would meet at least the Tier 2 emissions standard.

Overall, this emissions control program is expected to significantly reduce DPM emissions by a similar or greater reduction level that would be achieved by applying the currently defined best available control technologies under NYC Local Law 77 of 2003, which are required only for publically funded City projects.

METHODOLOGY

Chapter 15, "Air Quality," contains a review of the pollutants for analysis; applicable regulations, standards, and benchmarks; and general methodology for stationary source air quality analyses. Additional details relevant only to the construction air quality analysis methodology are presented in the following section.

The *CEQR Technical Manual* states that the significance of a likely consequence (i.e., whether it is material, substantial, large, or important) should be assessed in connection with its setting (e.g., urban or rural), its probability of occurrence, its duration, its irreversibility, its geographic scope, its magnitude, and the number of people affected. In terms of the magnitude of air quality impacts, an action predicted to increase the concentration of a criteria air pollutant to a level that would exceed the NAAQS, or increase the concentration of $PM_{2.5}$ above the *de minimis* criteria, could have an adverse impact of significant magnitude. The factors identified above would then be considered in determining the overall significance of the potential impact.

On-Site Construction Activity Assessment

Worst-case periods of construction activity within the Project Area were assessed to determine the potential for significant adverse air quality impacts. To determine which construction periods constitute the worst-case periods for the pollutants of concern (PM, CO, NO_2), construction-related emissions were calculated throughout the duration of construction on an annual and peak day basis for $PM_{2.5}$. The pollutant $PM_{2.5}$ was selected for determining the worst-case periods for all pollutants as analyzed, because the ratio of $PM_{2.5}$ emissions to impact criteria is higher than for other pollutants. Therefore, initial estimates of $PM_{2.5}$ emissions throughout the construction years were used for determining the worst-case periods for analysis of all pollutants. Generally, emission

[5] The first federal regulations for new nonroad diesel engines were adopted in 1994, and signed by EPA into regulation in a 1998 Final Rulemaking. The 1998 regulation introduces Tier 1 emissions standards for all equipment 50 hp and greater and phases in the increasingly stringent Tier 2 and Tier 3 standards for equipment manufactured in 2000 through 2008. In 2004, the EPA introduced Tier 4 emissions standards with a phased-in period of 2008 to 2015. The Tier 1 through 4 standards regulate the EPA criteria pollutants, including particulate matter (PM), hydrocarbons (HC), oxides of nitrogen (NO_x) and carbon monoxide (CO). Prior to 1998, emissions from nonroad diesel engines were unregulated. These engines are typically referred to as Tier 0.

patterns of PM_{10} and NO_2 would follow $PM_{2.5}$ emissions, since they are related to diesel engines by horsepower (hp). CO emissions may have a somewhat different pattern but generally would also be highest during periods when the most activity would occur. Based on the resulting multi-year profiles of annual average and peak day average emissions of $PM_{2.5}$, and the proximity of the construction activities to residences, academic buildings, and publicly accessible open spaces, a worst-case year and worst-case short-term period were identified for dispersion modeling of annual and short-term (i.e., 24-hour, 8-hour, and 1-hour) averaging periods. Dispersion of the relevant air pollutants from the site during these periods was then analyzed, and the highest resulting concentrations are presented in the following sections. Broader conclusions regarding potential concentrations during other periods, which were not modeled, are presented as well, based on the multi-year emissions profiles and the worst-case period results.

Engine Emissions

The sizes, types, and number of construction equipment were estimated based on the construction activity schedule. Emission factors for NO_x, CO, PM_{10}, and $PM_{2.5}$ from on-site construction engines were developed using the EPA's NONROAD2008 Emission Model (NONROAD). Since emission factors for concrete pumps are not available from either the EPA MOVES emission model or NONROAD, emission factors specifically developed for this type of application were used.[6] With respect to trucks, emission rates for NO_X, CO, PM_{10}, and $PM_{2.5}$ for truck engines were developed using MOVES.

All personnel/material hoists and small hand tools would be electric and powered by either diesel generators or connected to grid power when it becomes available. Therefore, these engines would have no associated emissions.

On-Site Fugitive Dust

In addition to engine emissions, fugitive dust emissions from operations (e.g., excavation and loading excavated materials into dump trucks during the demolition and excavation tasks) were calculated based on EPA procedures delineated in AP-42 Table 13.2.3-1. It was estimated that the planned control of fugitive emissions would reduce PM emissions from such processes by 50 percent. To avoid the re-suspension of dust, a watering program would be implemented for all demolition, excavation, and transfer of loose materials to and from trucks.

Analysis Periods

The resulting emission factors were used for the emissions and dispersion analyses. Average annual (running 12-month averages) and peak-day $PM_{2.5}$ engine emissions profiles for the entire duration of the construction were prepared by multiplying the above emission rates by the number of engines, the work hours per day (it was assumed that construction would operate for an eight hour work day), and fraction of the day each engine would be expected to work during each month. The resulting overall peak day and annual average emission profiles are presented in **Figures 20-2 and 20-3**.

[6] Concrete pumps are truck mounted and use the truck engine to power the pumps at high load. This application of truck engines is not addressed by the MOVES model, and since it is not a non-road engine, it is not included in the NONROAD model. Emission factors were obtained from a study which developed factors specifically for this type of activity. *FEIS for the Proposed Manhattanville in West Harlem Rezoning and Academic Mixed-Use Development*, CPC–NYCDCP, November 16, 2007.

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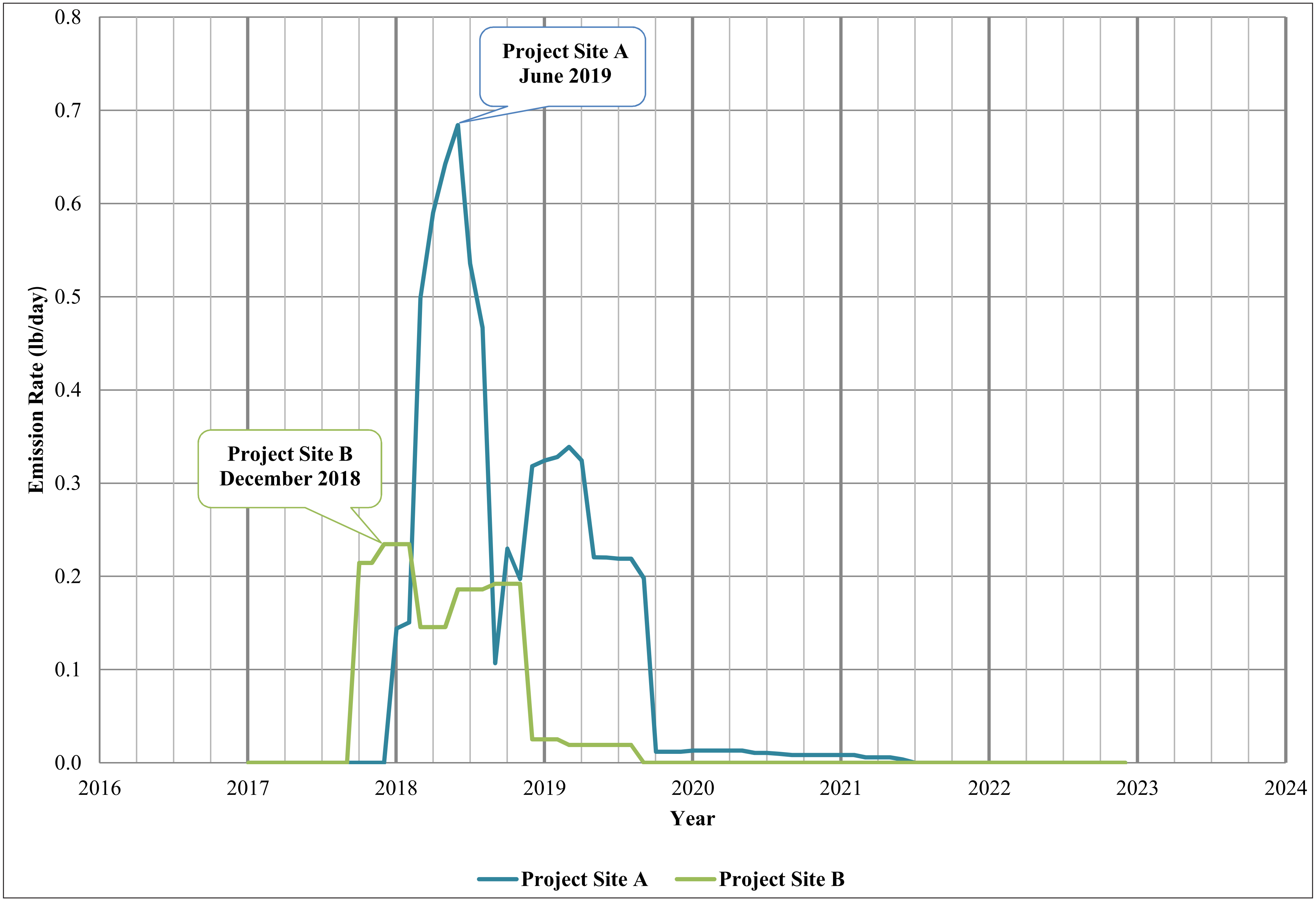

Short-Term (24-Hour Average) $PM_{2.5}$ Construction Emissions Profile

BLOCK 675 EAST

Figure 20-2

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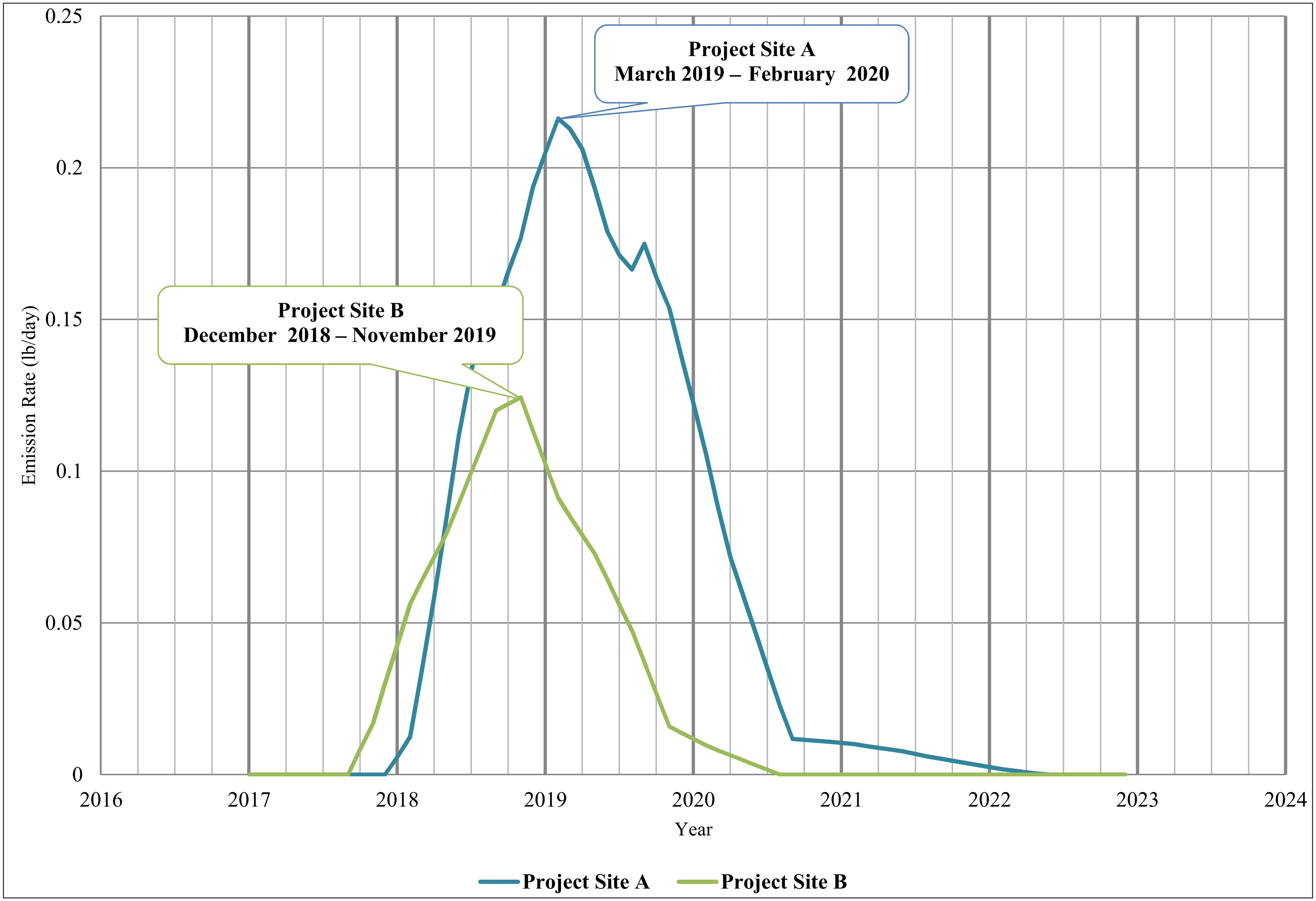


Annual (Moving 12-Month Average) $PM_{2.5}$ Construction Emissions Profile

Figure 20-3

Dispersion Modeling

Based on the $PM_{2.5}$ construction emissions profiles developed using the conceptual construction schedule, the average number of daily construction workers and trucks, and construction equipment estimates, one peak short-term and annual period were selected for modeling at each of the project sites representing the maximum combined project-wide emissions. Emissions associated with pile driving were modeled within the excavation stage for project site B—the worst-case construction stage. These emissions will be modeled occurring within the foundation phase between the DEIS and the FEIS. June 2019 and December 2018 as well as the years from March 2019 to February 2020 and December 2018 to November 2019 were identified as the worst-case short-term and annual periods for project site A and B, respectively, since the highest project-wide emissions were predicted in these periods. The selected analysis periods are indicated in **Figures 20-2 and 20-3**. The dispersion of pollutants during the worst-case short-term and annual periods was then modeled in detail to predict resulting maximum concentration increments from construction activity and total concentrations (including background concentrations) in the surrounding area. The worst-case periods for project site A and B were conservatively assumed to occur simultaneously.

Although the modeled results are based on construction scenarios for specific sample periods, conclusions regarding other periods were derived based on the fact that lower concentration increments from construction would generally be expected during periods with lower construction emissions. As presented in **Figures 20-2 and 20-3**, emissions during other periods would be lower than the peak emissions. However, since the worst-case short-term results may often be indicative of local impacts, similar maximum local impacts may occur at any stage at various locations but would not persist in any single location, since emission sources would not be located continuously at any single location throughout construction. Equipment would move throughout the site as construction progresses.

Source Simulation

For the short-term model scenarios, predicting concentration averages for periods of 24 hours or less, all stationary sources, such as compressors, generators, or concrete trucks, which idle in a single location while unloading, were simulated as point sources. Other engines, which would move around the site on any given day, were simulated as area sources for the 24 hour and 8 hour periods. These engines were also simulated as point sources for the 1 hour period. For periods of 8 hours or less (less than the length of a shift), it was assumed that all engines would be active simultaneously. With the exception of tower cranes, all sources would move around the site throughout the year and were therefore simulated as area sources in the annual analyses.

Receptor Locations

Receptors (locations in the model where concentrations are predicted) were placed along the sidewalks surrounding the construction sites on both sides of the street at locations that would be publicly accessible, at residential and other sensitive uses at both ground-level and elevated locations (e.g., residential windows), and at open spaces. In addition, a ground-level receptor grid was placed to enable extrapolation of concentrations throughout the entire area at locations more distant from the construction sites.

Background Concentrations

Where needed to determine potential air quality impacts from the construction of the project, background ambient air quality data for criteria pollutants were added to the predicted off-site concentrations. The background data were obtained from nearby DEC monitoring stations that best represented the area surrounding the site. Those monitoring years were 2012 through 2016.

These background concentrations are provided below in **Table 20-15**. Short-term concentrations (i.e., 24- and 8-hour averages) represent the second highest concentration of the five year data set, with the exception of PM_{10}, which is based on three years of data, consistent with current DEP guidance (2014–2016). The annual concentration represents the maximum value of the five year data set. For $PM_{2.5}$, background concentrations are not considered, since impacts are determined on an incremental basis only.

Table 20-15
Background Pollutant Concentrations

Pollutant	Monitoring Station	Averaging Period	Background Concentration (μg/m^3)	Ambient Standard (μg/m^3)
NO_2	IS 52, Bronx	Annual	37.6	100
CO	CCNY, Manhattan	1-hr	2,634	40,000
		8-hr	1,718	10,000
PM_{10}	Division Street, Manhattan	24-hr	44	150
$PM_{2.5}$	PS19, Manhattan	24-hr	24.2	35
Source: New York State Air Quality Report Ambient Air Monitoring System, NYSDEC, 2012–2016.				

On-Road Sources

Traffic increments during construction for the proposed actions would not exceed any thresholds defined in the *CEQR Technical Manual* for traffic analysis, it is assumed that the maximum hourly increase in traffic volume due to the proposed actions would not exceed the carbon monoxide (CO) or the particulate matter (PM) emission screening thresholds defined in the *CEQR Technical Manual* (170 auto trips for peak hour trips at nearby intersections in the study area for CO and PM emission equivalent to 12 to 23 heavy duty vehicles for peak hour trips, depending on roadway type.) Therefore, a standalone mobile-source analysis would not be required.

However, emissions from on-site construction equipment and on-road construction-related vehicles may contribute to concentration increments concurrently. Therefore, on-road emissions sources located adjacent to the construction sites were included with the on-site dispersion analysis (in addition to on-site truck and non-road engine activity) to address all local project-related emissions cumulatively.

On-Road Vehicle Emissions

Vehicular engine emission factors will be computed using the EPA mobile source emissions model, MOVES2014a.[7] This emissions model is capable of calculating engine emission factors for various vehicle types, based on the fuel type (gasoline, diesel, or natural gas), meteorological conditions, vehicle speeds, vehicle age, roadway type, and grade, number of starts per day, engine soak time, and various other factors that influence emissions, such as inspection maintenance programs. The inputs and use of MOVES incorporate the most current guidance available from NYSDEC.

THE FUTURE WITHOUT THE PROPOSED ACTIONS

In the future without the proposed actions, air quality is anticipated to be similar to that described for existing conditions. Land uses are expected to remain generally the same in this neighborhood. Since air quality regulations mandated by the Clean Air Act are anticipated to maintain or improve

[7] EPA, Motor Vehicle Emission Simulator (MOVES), User Guide for MOVES2014a, November 2015.

air quality in the region, it can be expected that air quality conditions in the future without the proposed actions would be similar to those that presently exist.

THE FUTURE WITH THE PROPOSED ACTIONS

On-Site Construction Activity Assessment

Maximum predicted concentrations during the representative worst-case construction period for the proposed actions are presented in **Table 20-16**. To estimate the maximum total pollutant NO_2, CO, and PM_{10} concentrations, the modeled concentrations from construction for the proposed actions were added to a background value that accounts for existing pollutant concentrations from other nearby sources. As shown in **Table 20-16**, the maximum predicted total concentrations of NO_2, CO and PM_{10} are below the applicable NAAQS.

Table 20-16
Maximum Pollutant Concentrations from the Proposed Actions

Pollutant	Averaging Period	Units	Maximum Modeled Impact	Background Concentration (1)	Total Concentration	Criterion
NO_2	Annual	µg/m³	8.5	37.6	46.1	100 (2)
CO	1-hour	µg/m³	27,262	2,634	29,896	40,000 (2)
	8-hour	µg/m³	1,229	1,718	2,947	10,000 (2)
PM_{10}	24-hour	µg/m³	8.8	44	52.8	150 (2)
$PM_{2.5}$	24-hour	µg/m³	3.40	23.9	N/A	5.55 (3)
	Annual—Local	µg/m³	0.28	N/A	N/A	0.3 (4)
	Annual—Neighborhood	µg/m³	0.01	N/A	N/A	0.1 (4)

Notes:
N/A—Not Applicable
[1] The background levels are based on the most representative concentrations monitored at DEC ambient air monitoring stations (see Table 15-5 in Chapter 15, “Air Quality”).
[2] NAAQS.
[3] $PM_{2.5}$ *de minimis* criterion—24-hour average, not to exceed more than half the difference between the background concentration and the 24-hour standard of 35 µg/m³.
[4] $PM_{2.5}$ *de minimis* criterion—annual (local and neighborhood scale).

The maximum predicted $PM_{2.5}$ concentrations would not exceed the applicable CEQR *de minimis* thresholds in the 24-hour[8] and annual averaging periods.

Emissions from the other less intensive construction stages would be less than the emissions during the peak construction period. The resulting concentrations from the non-peak periods of construction are expected to be less than the concentrations presented in **Table 20-16**. Therefore, there would be no significant adverse air quality impacts as a result of the construction of the proposed actions.

Consideration of Hudson Tunnel Project

As discussed in Chapter 1, “Project Description,” the Hudson Tunnel Project is expected to start in 2019 with completion of the project expected in 2026. Construction activities would take place on the western portion of the project block immediately west of the Project Area. The most intense period of construction activity for the Hudson Tunnel Project is anticipated to occur from December 2019 to March 2022 when the Hudson Tunnel would be in excavation and construction of the Twelfth Avenue shaft, cut and cover of 30th Street as well as Tenth Avenue, and

[8] The CEQR 24-hour $PM_{2.5}$ *de minimis* criterion is equal to half the difference between the 24-hour background concentration (23.9 µg/m³) and the 24-hour standard (35 µg/m³).

underpinning for the Lerner Building on Tenth Avenue between West 31st and 33rd Streets. The most intense stage located within the western portion of the project block—excavation and construction of the Twelfth Avenue Shaft—would begin in early 2020 and continue until mid/late 2022. During this time period construction for both project sites A and B are anticipated to be in the superstructure and interior phases. Before 2020, most construction activities would occur at locations in New Jersey. In addition, a portion of Lot 12 may be needed for Hudson Tunnel Project construction staging purposes between 2019 and 2026.

While the Hudson Tunnel DEIS predicts that incremental $PM_{2.5}$ concentrations would exceed the 24-hour and annual $PM_{2.5}$ *de minimis* criteria during the most intense stages of construction, total concentrations of all analyzed pollutants ($PM_{2.5}$, PM_{10}, CO, and NO_2) would be below the corresponding NAAQS.[9] As discussed in the Hudson Tunnel DEIS, although there is the potential for significant adverse air quality impacts in accordance with the New York City impact criteria, the maximum predicted total concentrations are projected to be lower than the corresponding NAAQS and therefore, construction associated with the Hudson Tunnel Project would not result in any significant adverse air quality impacts under the Federal impact criteria. Therefore, the Hudson Tunnel DEIS concludes that the construction of the Hudson Tunnel Project would not result in any significant adverse air quality impacts.

In the event that construction activities for the Hudson Tunnel Project and the proposed actions overlap, an assessment was undertaken regarding conditions when both projects may be under construction. In general, construction activity is temporary in nature, and maximum pollutant concentrations would only be predicted to occur within the most intense period of construction activity for the proposed actions—approximately 19 months of the 42 month construction schedule. As discussed above, while no significant adverse air quality impacts are predicted for the proposed actions, construction for the proposed actions could contribute to elevated incremental concentrations at nearby locations where the Hudson Tunnel DEIS predicts concentrations in exceedance of the City's $PM_{2.5}$ *de minimis* criteria due to the construction of the Hudson Tunnel Project alone (along western portions of West 30th Street and West 29th Street). Based on the predicted concentrations for the construction of the Hudson Tunnel and the proposed projects, the area of exceedance identified in the Hudson Tunnel DEIS would likely extend farther east along West 30th Street and West 29th Street than presented for the Hudson Tunnel Project alone. However, no new exceedances are expected to occur at either Eleventh Avenue sidewalk locations or the nearby High Line open space. Additionally, the combined $PM_{2.5}$, PM_{10}, CO, and NO_2 concentrations under the most intense period of construction activity for the proposed actions would not exceed the corresponding NAAQS with the exception of the 24-hour average $PM_{2.5}$ concentration (discussed below). Combining the maximum concentrations from the Hudson Tunnel Project with the maximum concentrations from the proposed project results in a conservatively high estimate of potential cumulative concentrations. It is likely that the highest results from the different projects would occur under different dates and different meteorological conditions (e.g., different wind direction and speed) and consequently are not expected to actually occur simultaneously.

Based on the anticipated construction schedules, the peak construction period associated with the proposed actions is not expected to overlap with those for the Hudson Tunnel Project. As discussed

[9] U.S. Department of Transportation Federal Railroad Administration and NJ TRANSIT. Hudson Tunnel Project Draft Environmental Impact Statement and Draft Section 4(f) Evaluation. Chapter 13: Air Quality. Section 16.6.4.3 Combined Impact Assessment. June 2017.

above, the peak period of pollutant emissions associated with the construction for the proposed actions would occur in early/mid 2019 when construction for the Hudson Tunnel Project would be undergoing site preparation and set up procedures. During this period, emissions from the Hudson Tunnel Project would be less than half of the peak construction period modeled. Similarly, maximum concentrations associated with the Hudson Tunnel Project would occur in 2021—when construction emissions for the proposed actions would be much less than the peak construction period modeled. Based on the anticipated construction schedules for the proposed projects and the Hudson Tunnel Project, the peak construction activities are not anticipated to overlap; therefore, it is anticipated that construction for the proposed actions is not expected to result in exceedances of the $PM_{2.5}$ *de minimis* criteria not already identified in the Hudson Tunnel DEIS and there would be no exceedance of the 24-hour average $PM_{2.5}$ NAAQS due to combined construction activities for the projects.

Consequently, the pollutant concentrations from construction activities at nearby receptor locations would be attributed to either the Hudson Tunnel Project as disclosed in the Hudson Tunnel DEIS or by the proposed actions and would not alter the conclusions presented in the Hudson Tunnel DEIS or this ~~D~~EIS.

NOISE

INTRODUCTION

Potential impacts on community noise levels could result from construction equipment operation as well as construction vehicles and delivery vehicles traveling to and from the site. Noise and vibration levels at a given location are dependent on the kind and number of pieces of construction equipment being operated, the acoustical utilization factor of the equipment (i.e., the percentage of time a piece of equipment is operating at full power), the distance from the construction site, and any shielding effects (from structures such as buildings, walls, or barriers). Noise levels caused by construction activities would vary widely, depending on the stage of construction and the location of the construction relative to receptor locations. The most significant construction noise sources are expected to be impact equipment such as jackhammers, excavators with hydraulic break rams, tower cranes, and paving breakers, as well as the movements of trucks.

Construction noise is regulated by the requirements of the *New York City Noise Control Code* (also known as Chapter 24 of the *Administrative Code of the City of New York*, or Local Law 113) and the DEP Notice of Adoption of Rules for Citywide Construction Noise Mitigation (also known as Chapter 28). These requirements mandate that specific construction equipment and motor vehicles meet specified noise emission standards; that construction activities be limited to weekdays between the hours of 7 AM and 6 PM; and that construction materials be handled and transported in such a manner as not to create unnecessary noise. As described above, for weekend and after hour work, permits would be required to be obtained, as specified in the *New York City Noise Control Code*. As required under the *New York City Noise Control Code*, a site-specific noise mitigation plan for the proposed actions would be developed and implemented that may include source controls, path controls, and receiver controls.

CONSTRUCTION NOISE IMPACT CRITERIA

Chapter 22, Section 100 of the *CEQR Technical Manual* breaks construction duration into “short-term” and “long-term” and states that construction noise is not likely to require analysis unless it “affects a sensitive receptor over a long period of time.” Consequently, the construction noise analysis considers both the potential for construction of a project to create high noise levels (the "intensity"), and whether construction noise would occur for an extended period of time (the "duration") in evaluating potential construction noise effects.

Chapter 19, Section 421 of the *CEQR Technical Manual* states that the impact criteria for vehicular sources, using conditions without the proposed actions, or the "No Action" noise level as the baseline, should be used for assessing construction effects. As recommended in Chapter 19, Section 410 of the *CEQR Technical Manual*, this study uses the following criteria to define a significant adverse noise impact from mobile and on-site construction activities:

- If the No Action noise level is less than 60 dBA $L_{eq(1)}$, a 5 dBA $L_{eq(1)}$ or greater increase would be considered significant.
- If the No Action noise level is between 60 dBA $L_{eq(1)}$ and 62 dBA $L_{eq(1)}$, a resultant $L_{eq(1)}$ of 65 dBA or greater would be considered a significant increase.
- If the No Action noise level is equal to or greater than 62 dBA $L_{eq(1)}$, or if the analysis period is a nighttime period (defined in the CEQR criteria as being between 10PM and 7AM), the incremental significant impact threshold would be 3 dBA $L_{eq(1)}$.
- For residential spaces to be created as part of the proposed actions, noise levels during construction were evaluated based on the *CEQR Technical Manual* noise exposure guidance for residential uses, which specify an $L_{10(1)}$ noise level of 45 dBA as acceptable for residential use. Exceedances of this threshold that do not occur "over a long period of time," as mentioned above, are not considered to constitute significant adverse noise impacts.

NOISE ANALYSIS FUNDAMENTALS

As stated above, construction activities for the proposed actions would be expected to result in increased noise levels as a result of: (1) the operation of construction equipment on-site; and (2) the movement of construction-related vehicles (i.e., worker trips, and material/equipment trips) on the roadways to and from the project site. The effect of each of these noise sources was evaluated. The results presented below show the effects of construction activities (i.e., noise due to both on-site construction equipment and construction-related vehicle operation) on noise levels at nearby noise receptor locations.

Noise from the operation of construction equipment at a specific receptor location near a construction site is generally calculated by computing the sum of the noise produced by all pieces of equipment operating at the construction site. For each piece of equipment, the noise level at a receptor site is a function of the following:

- The noise emission level of the equipment;
- A usage factor, which accounts for the percentage of time the equipment is operating at full power;
- The distance between the piece of equipment and the receptor;
- Topography and ground effects; and
- Shielding.

Similarly, noise levels due to construction-related traffic are a function of the following:

- The noise emission levels of the type of vehicle (e.g., auto, light-duty truck, heavy-duty truck, bus, etc.);

- Volume of vehicular traffic on each roadway segment;
- Vehicular speed;
- The distance between the roadway and the receptor;
- Topography and ground effects; and
- Shielding.

CONSTRUCTION NOISE MODELING

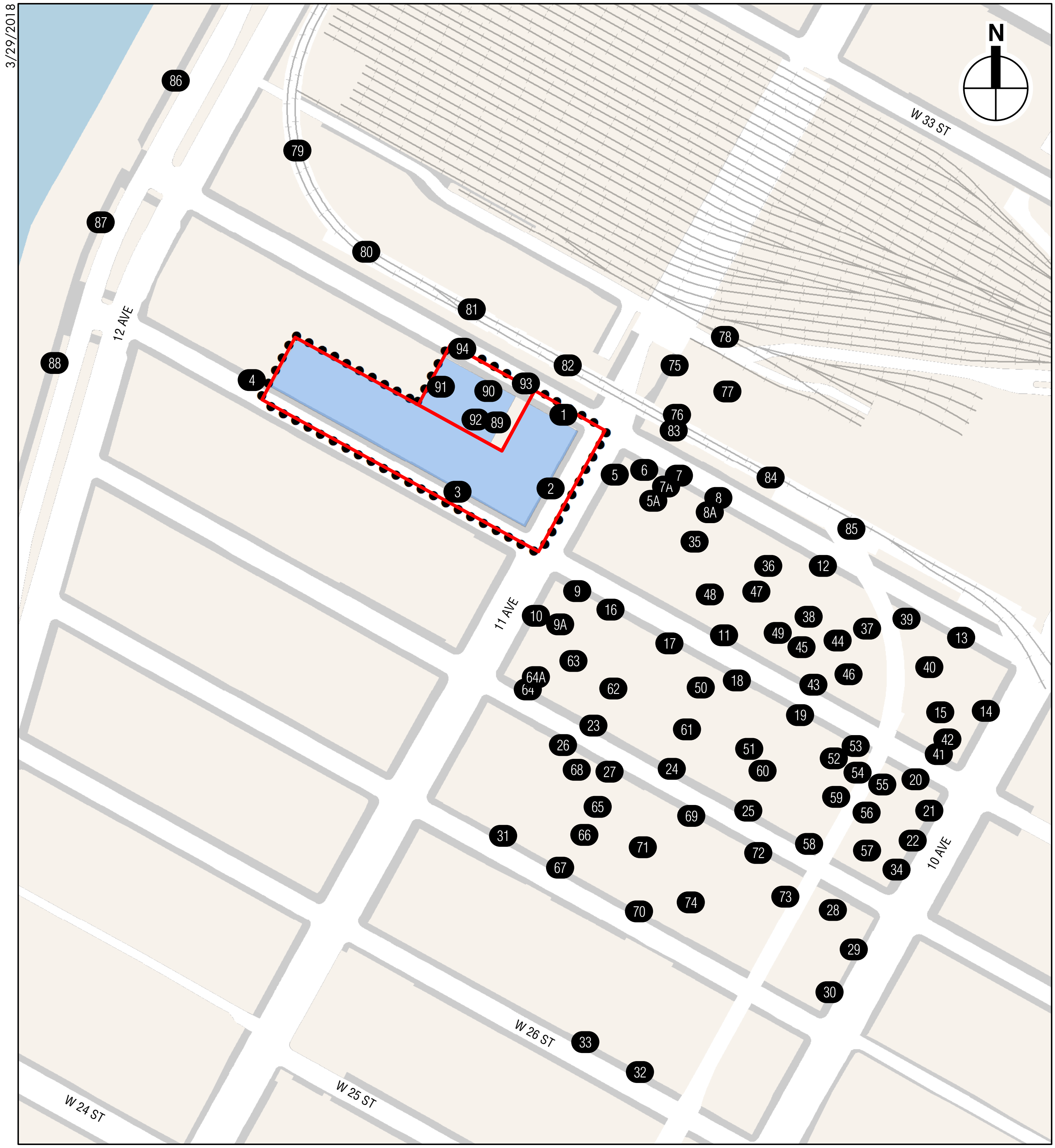
Noise effects from construction activities were evaluated using the CadnaA model, a computerized model developed by DataKustik for noise prediction and assessment. The model can be used for the analysis of a wide variety of noise sources, including stationary sources (e.g., construction equipment, industrial equipment, power generation equipment) and transportation sources (e.g., roads, highways, railroad lines, busways, waterways, airports). The model takes into account the reference sound pressure levels of the noise sources at 50 feet, attenuation with distance, ground contours, reflections from barriers and structures, attenuation due to shielding, etc. The CadnaA model is based on the acoustic propagation standards promulgated in International Standard ISO 9613-2. The CadnaA model is a state-of-the-art tool for noise analysis and is approved for construction noise level prediction by the *CEQR Technical Manual*.

Geographic input data to be used with the CadnaA model includes CAD drawings defining planned site work areas, adjacent building footprints and heights, locations of streets, and locations of sensitive receptors. For each analysis period, the geographic location and operational characteristics of each piece of construction equipment were input to the model. Reflections and shielding by barriers and project elements erected on the construction site and shielding from adjacent buildings were also accounted for in the model. The model produces A-weighted $L_{eq(1)}$ noise levels at each receptor location for each analysis period, as well as the contribution from each noise source.

NOISE ANALYSIS METHODOLOGY

The construction noise methodology involved the following process:

1. Select analysis hours for cumulative on-site equipment and construction truck noise analysis. The 7 AM hour was selected as the analysis hour because this would be the hour when the highest number of truck trips to and from the construction site would overlap with on-site equipment operation.
2. Select receptor locations for cumulative on-site equipment and construction truck noise analysis. Selected receptors were representative of open space, residential, or other noise-sensitive uses potentially affected by the construction for the proposed actions during operation of on-site construction equipment and/or along routes taken to and from the project site by construction trucks.
3. Establish existing noise levels at selected receptors. Noise levels were measured at several at-grade locations, and calculated for the other noise receptor locations included in the analysis. **Figure 20-4** shows the construction noise measurement locations. Existing noise levels at noise receptors other than the selected noise measurement locations were established using the CadnaA model along with existing-condition traffic information.
4. Establish worst-case noise analysis periods under the projected construction phasing schedule. The worst-case noise analysis periods are the periods during the construction



Project Sites

Proposed C6-4X

Proposed Special Hudson River Park District

Noise Receptor Location

Construction Noise Receptor Locations

Figure 20-4

schedule that are expected to have the greatest potential to result in construction noise effect. These periods were determined based on number and type of equipment operating on-site, and the amount of construction-related vehicular traffic expected to occur according to the construction schedule and logistics. At least one analysis period was selected per year of construction. Five analysis periods throughout the construction schedule were selected.

5. Calculate construction noise levels for each analysis period at each receptor location. Given the on-site equipment and construction truck trips that are expected during each of the analysis periods, and the location of the equipment, which was based on construction logistics diagrams and construction truck and worker vehicle trip assignments, a CadnaA model file for each analysis period was created. All model files included each of the construction noise sources during the analysis period and hour, calculation points representing multiple locations on various façades and floors of the associated receptors previously identified, as well as the noise control measures that would be used on the site, as described below.
6. Determine total noise levels and noise level increments during construction. For each analysis period and each noise receptor, the calculated level of construction noise was logarithmically added to the existing noise level to determine the cumulative total noise level. The existing noise level at each receptor was then arithmetically subtracted from the cumulative noise level in each analysis period to determine the noise level increments.
7. Establish construction noise duration. For each receptor, the noise level increments in each analysis period were examined to determine the duration during construction that the receptor would experience substantially elevated noise levels.
8. Compare noise level increments with impact criteria as set forth in Chapter 19, Section 421 of the *CEQR Technical Manual*. At each receptor, based on the magnitude and duration of predicted noise level increases due to construction, a determination of whether the proposed actions would have the potential to result in significant adverse construction noise effects was made.

NOISE REDUCTION MEASURES

Construction for the proposed actions would be required to follow the *NYC Noise Control Code* (also known as Chapter 24 of the Administrative Code of the City of New York, or Local Law 113) for construction noise control measures. Specific noise control measures would be incorporated in noise mitigation plan(s) required under the *NYC Noise Code*. These measures could include a variety of source and path controls.

- In terms of source controls (i.e., reducing noise levels at the source or during the most sensitive time periods), the following measures would be implemented in accordance with the *NYC Noise Code*:
- Equipment that meets the sound level standards specified in Subchapter 5 of the *NYC Noise Control Code* would be utilized from the start of construction. The proposed actions would be committed to using some pieces of equipment that produce lower noise levels than typical construction equipment as required by the New York City Noise Control Code. **Table 20-17** shows the noise levels for typical construction equipment and the mandated noise levels for the equipment that would be used for construction of the proposed actions.
- Where feasible and practicable, construction sites would be configured to minimize back-up alarm noise. In addition, all trucks would not be allowed to idle more than three minutes at the construction site based upon Title 24, Chapter 1, Subchapter 7, Section 24-163 of the *NYC Administrative Code*.

- Contractors and subcontractors would be required to properly maintain their equipment and mufflers.

In terms of path controls (e.g., placement of equipment, implementation of barriers or enclosures between equipment and sensitive receptors), the following measures for construction would be implemented to the extent feasible and practicable:

- Where logistics allow, noisy equipment, such as cranes, concrete pumps, concrete trucks, and delivery trucks, would be located away from and shielded from sensitive receptor locations.
- As early in the construction period as logistics would allow, diesel- or gas-powered equipment would be replaced with electrical-powered equipment such as welders, water pumps, bench saws, and table saws (i.e., early electrification) to the extent feasible and practicable.
- Noise barriers constructed from plywood or other materials would be utilized to provide shielding (e.g., the construction sites would have a minimum 8-foot barrier);
- Where logistics allow, truck deliveries would take place behind the noise barriers; and
- Path noise control measures (i.e., portable noise barriers, panels, enclosures, and acoustical tents, where feasible) for certain dominant noise equipment to the extent feasible and practical based on the results of the construction noise calculations. The details to construct portable noise barriers, enclosures, tents, etc. are shown in DEP's "Rules for Citywide Construction Noise Mitigation."[10]

[10] As found at: http://www.nyc.gov/html/dep/pdf/noise_constr_rule.pdf

Table 20-17
Typical Construction Equipment Noise Emission Levels (dBA)

Equipment List	NYCDEP L_{max} Noise Level Limit at 50 feet[1]
Auger Drill Rig	85
Backhoe	80
Bar Bender	80
Compactor (ground)	80
Compressor (air, less than or equal to 350 cfm)	53
Compressor (air, greater than 350 cfm)	80
Concrete Mixer Truck	85
Concrete Trowel	67[2]
Concrete Pump Truck	82
Concrete Saw	90
Crane	85
Dozer	85
Drill Rig Truck	84
Dump Truck	84
Dumpster/Rubbish Removal	78
Excavator	85
Flat Bed Truck	84
Front End Loader	80
Generator	82
Generator (< 25 KVA, VMS signs)	70
Gradall	85
Hoist	75[3]
Impact Pile Driver	95
Jackhammer	73
Man Lift	85
Paver	85
Pickup Truck	55
Pneumatic Tools	85
Pumps	77
Rock Drill	85
Roller	85
Slurry Plant	78
Soil Mix Drill Rig	80
Tractor	84
Welder / Torch	73
Rock Drill	85

Source:
[1] "Rules for Citywide Construction Noise Mitigation," Chapter 28, DEP, 2007.
[2] Columbia Manhattanville Noise Certification.
[3] "Noise Control for Construction Equipment…" Report for Hydro Quebec, 1985.

NOISE RECEPTOR SITES

Within the study area, 84 receptor locations (i.e., sites 5 to 88, beyond the measurement sites 1 to 4 as established in Chapter 17, "Noise") were selected to represent buildings or noise-sensitive open space locations close to the project site for the construction noise analysis. These receptors were either located adjacent to planned areas of activity or streets where construction trucks would pass. At some buildings, multiple façades were analyzed as receptors. At high-rise buildings, noise receptors were selected at multiple elevations. At open space locations like the Hudson River Park and Route 9A Bikeway, receptors were selected at street level and at open space locations on the High Line, receptors were selected at elevated levels. The receptor sites selected for detailed analysis are representative locations where maximum project effects due to construction noise would be expected. At-grade noise measurements were conducted at sites 1 through 4 to determine existing noise levels in the study area.

Figure 20-4 shows the locations of the ~~88~~ 94 noise receptor sites, and **Table 20-18** lists the ~~four~~ six noise measurement sites as well as the ~~84~~ 88 noise receptor sites and the associated land use at these sites.

Table 20-18
Noise Receptor Locations by Location and Associated Land Use

Receptor	Location	Associated Land Use
1	West 30th Street between Eleventh and Twelfth Avenues adjacent to Project Site A	n/a (measurement location)
2	Eleventh Avenue between West 29th and West 30th Streets	n/a (measurement location)
3	West 29th Street between Eleventh and Twelfth Avenues (eastern side of the block)	n/a (measurement location)
4	West 29th Street between Eleventh and Twelfth Avenues (eastern side of the block)	n/a (measurement location)
5–8, 35	534 West 30th Street	Residential with Commercial Below
9–10, 23–25, 60–64A	539 West 28th Street	Residential
11, 47–49	529 West 29th Street	Residential with Commercial Below
12, 36–38	520 West 30th Street	Residential with Commercial Below
13–15, 39–42	500 West 30th Street	Residential with Commercial Below
16	546 West 29th Street	Residential
17	540 West 29th Street	Residential
18, 19, 50, 51	522 West 29th Street	Residential with Commercial Below
20, 21, 55	323 Tenth Avenue	Residential with Commercial Below
22, 56	319 Tenth Avenue	Residential with Commercial Below
26, 31	547 West 27th Street	Residential with Commercial Below
27, 65, 68	540 West 28th Street	Residential with Commercial Below
28, 29	303 Tenth Avenue	Residential with Commercial Below
30	299 Tenth Avenue	Residential with Commercial Below
32, 33	519 West 26th Street	Residential with Commercial Below
34, 57	315 Tenth Avenue	Residential with Commercial Below
43–46	517 West 29th Street	Residential
52	526 West 29th Street	Residential with Commercial Below
53, 54	508 West 29th Street	Residential
58, 59	509 West 28th Street	Residential with Commercial Below
66, 67	537 West 27th Street	Residential
69–71	526 West 28th Street	Residential with Commercial Below
72–74	514 West 28th Street	Residential with Commercial Below
75–78	15 Hudson Yards	Residential with Commercial Below
79–85	High Line	Open Space
86–88	Hudson River Park and Route 9A Bikeway	Open Space
89–92	606 West 30th Street	Future Residential
93	West 30th Street between Eleventh and Twelfth Avenues at the Northeast Corner of Project Site B	n/a (measurement location)
94	West 30th Street between Eleventh and Twelfth Avenues at the Northwest Corner of Project Site B	n/a (measurement location)

NOISE MEASUREMENT RESULTS

Equipment Used During Noise Survey

Measurements were performed using a Brüel & Kjær Sound Level Meters (SLMs) Type 2260 and Type 2250, Brüel & Kjær ½-inch microphones Type 4189, and Brüel & Kjær Sound Level Calibrators Type 4231. The SLMs had a valid laboratory calibration within 1 year, as is standard practice. The Brüel & Kjær SLMs are a Type 1 instrument according to ANSI Standard S1.4-1983 (R2006). The microphones used at sites 1 through 4 were mounted at a height of approximately five feet above the ground surface on a tripod and at least approximately 5 feet away from any large reflecting surfaces. The SLMs were calibrated before and after readings with Brüel & Kjær Type 4231 Sound Level Calibrators using the appropriate adaptor. Measurements were made on the A-scale (dBA). The data were digitally recorded by the sound level meters and displayed at the end of the measurement period in units of dBA. Measured quantities included Leq, L1, L10, L50, L90, and 1/3 octave band levels. A windscreen was used during all sound measurements except for calibration. All measurement procedures were based on the guidelines outlined in ANSI Standard S1.13-2005.

Noise Survey Results

The baseline noise levels at each of the noise survey locations during the AM peak hours (i.e., 7 to 9 AM) are shown in **Table 20-19**. At all noise measurement locations, the dominant existing noise source was vehicular traffic on the adjacent roadways.

Table 20-19
Noise Survey Results in dBA

Receptor	Measurement Location	L_{EQ}
1	West 30th Street between Eleventh and Twelfth Avenues adjacent to Project Site A	72.4
2	Eleventh Avenue between West 29th and West 30th Streets	73.7
3	West 29th Street between Eleventh and Twelfth Avenues (eastern side of the block)	69.5
4	West 29th Street between Eleventh and Twelfth Avenues (eastern side of the block)	72.3
93	West 30th Street between Eleventh and Twelfth Avenues at the Northeast Corner of Project Site B	67.5
94	West 30th Street between Eleventh and Twelfth Avenues at the Northwest Corner of Project Site B	66.9

In terms of CEQR noise exposure guidelines during the morning analysis hour, existing noise levels at sites 1 through 4 are in the “marginally unacceptable” category.

CONSTRUCTION NOISE ANALYSIS RESULTS

Using the methodology described above, and considering the noise abatement measures from path controls specified above, cumulative noise analyses were performed to determine maximum 1-hour equivalent ($L_{eq(1)}$) noise levels that would be expected during each of the five months of the construction period selected for analysis at each of the 88 noise receptor locations. This resulted in a predicted range of peak hourly construction noise levels throughout the construction period.

The results of the detailed construction noise analysis are summarized in **Table 20-20** and the complete construction noise analysis is presented in **Appendix E**.

Table 20-20
Construction Noise Analysis Results in dBA

Receptor	Location	Existing L_{EQ}		Total L_{EQ}		Change in L_{EQ}	
		Min	Max	Min	Max	Min	Max
5–8, 35	534 West 30th Street	63.5	69.7	63.5	81.0	0.0	13.8
9–10, 23–25, 60–64A	539 West 28th Street	63.5	70.3	63.5	77.9	0.0	13.9
11, 47–49	529 West 29th Street	63.5	68.4	63.5	72.1	0.0	8.7
12, 36–38	520 West 30th Street	63.5	67.0	63.5	68.4	0.0	4.7
13–15, 39–42	500 West 30th Street	63.5	69.8	63.5	70.5	0.0	2.8
16	546 West 29th Street	64.7	68.9	66.3	76.4	0.0	11.2
17	540 West 29th Street	67.4	68.4	67.4	72.9	0.0	5.2
18, 19, 50, 51	522 West 29th Street	63.5	68.4	63.5	70.7	0.0	6.3
20, 21, 55	323 Tenth Avenue	63.5	69.8	63.5	69.9	0.0	3.3
22, 56	319 Tenth Avenue	63.5	69.6	63.5	69.6	0.0	0.1
26, 31	547 West 27th Street	64.6	68.2	64.6	68.2	0.0	0.3
27, 65, 68	540 West 28th Street	63.5	66.6	63.5	66.6	0.0	1.3
28, 29	303 Tenth Avenue	63.5	69.9	63.5	69.9	0.0	2.3
30	299 Tenth Avenue	66.7	69.7	66.7	69.7	0.0	0.0
32, 33	519 West 26th Street	63.5	63.5	63.5	64.0	0.0	0.5
34, 57	315 Tenth Avenue	63.5	69.6	63.5	69.6	0.0	0.4
43–46	517 West 29th Street	63.5	68.4	63.5	69.1	0.0	5.6
52	526 West 29th Street	63.5	63.5	63.5	65.5	0.0	2.0
53, 54	508 West 29th Street	63.5	68.2	63.5	69.6	0.0	1.8
58, 59	509 West 28th Street	63.5	66.7	63.5	66.8	0.0	0.1
66, 67	537 West 27th Street	63.5	68.4	63.5	68.4	0.0	0.1
69-71	526 West 28th Street	63.5	68.4	63.5	68.4	0.0	1.9
72–74	514 West 28th Street	63.5	66.9	63.5	66.9	0.0	2.1
75–78	15 Hudson Yards	63.5	72.8	63.5	76.2	0.0	11.6
79–85	High Line	63.5	72.7	63.5	79.5	0.0	14.0
86–88	Hudson River Park and Route 9A Bikeway	77.6	78.0	77.6	78.5	0.0	0.5

534 West 30th Street (The Ohm)

At 534 West 30th Street, located on the southeast corner of Eleventh Avenue and West 30th Street—Receptors 5 to 8 and 35—the existing noise levels range from the low to high 60s dBA depending on height above-grade (i.e., floor of the building).

Construction for the proposed actions is predicted to produce noise levels at these receptors up to low 80s dBA. Noise level increases would be up to approximately 14 dBA during the most noise-intensive stages of construction (i.e., excavation/foundation of project sites A and B, and when superstructure, exteriors and interior work at project site A and exteriors work at project site B overlap). During other stages of construction, noise levels would be up to mid 70s dBA with noise level increases up to approximately 9 dBA. The predicted noise level increases would be noticeable, but the overall noise levels would be in the range considered typical for Manhattan and for this area in general. According to *CEQR Technical Manual* noise exposure criteria, noise levels when superstructure, exteriors and interior work at project site A and exteriors work at project site B overlap at these receptors would be in the "clearly unacceptable" category, and noise levels during other phases of construction at these receptors would be in the "marginally unacceptable" category.

During the approximately four years of construction of project sites A and B, the activities that would produce the highest noise levels would be pile driving and superstructure work at project site A overlapping with similar activities at project site B. The loudest period of pile driving at project site A would occur for approximately 10 months during 2019 and the loudest period of superstructure work at project site A would occur for approximately 12 months during 2020. Consequently, the maximum noise levels predicted by the construction noise analysis would not persist throughout the construction period and would occur within each receptor area only for a limited period of time. Construction noise levels occurring outside the period of the maximum would still result in exceedances of CEQR impact criteria at some times, including noise level increments up to approximately 9 dBA during exteriors and interior work at project site A (approximately 11 months) and approximately 4 dBA during demolition at project site B (approximately 5 months), but would be substantially lower than the maximum construction noise levels during pile driving and superstructure work.

The building at 534 West 30th Street was determined by field observations to have insulated glass windows and an alternative means of ventilation (i.e., PTAC units), which would be expected to provide approximately 30 dBA window/wall attenuation. Consequently, interior noise levels at 534 West 30th Street during construction would be in the mid 50s dBA, up to approximately 9 dBA higher than the 45 dBA threshold recommended for residential use according to CEQR noise exposure guidelines.

Based on the prediction of construction noise levels up to the low 80s dBA with construction noise level increments up to approximately 14 dBA and a duration of maximum construction noise up to approximately 22 months with CEQR impact criteria exceedances occurring for up to a total of approximately 38 months, construction noise associated with the proposed actions would have the potential to result in a significant adverse impact at 534 West 30th Street.

Residences near the Corner of Eleventh Avenue and West 29th Street

At 539 West 28th Street, located on Eleventh Avenue between West 28th and West 29th Streets—Receptors 9, 10, 23 to 25, and 60 to 64A—and at 546 West 29th Street, located on West 29th Street between Tenth and Eleventh Avenues—Receptor 16—the existing noise levels range from the low 60s to low 70s dBA depending on height above-grade (i.e., floor of the building).

Construction for the proposed actions is predicted to produce noise levels at these receptors up to high 70s dBA with noise level increases up to approximately 14 dBA during the most noise-intensive stages of construction (i.e., excavation/foundation of project sites A and B, and when superstructure, exteriors and interior work at project site A and exteriors work at project site B overlap) and construction noise levels up to low 70s dBA with noise level increases up to approximately 7 dBA during other stages of construction. The predicted noise level increases would be noticeable, but the overall noise levels would be in the range considered typical for Manhattan and for this area in general. According to *CEQR Technical Manual* noise exposure criteria, noise levels when superstructure, exteriors and interior work at project site A and exteriors work at project site B overlap at these receptors would be in the “clearly unacceptable” category, and noise levels during other phases of construction at these receptors would be in the “marginally unacceptable” category.

During the approximately four years of construction of project sites A and B, the activities that would produce the highest noise levels would be pile driving at project site A, and superstructure work at project site A overlapping with similar activities at project site B. The loudest period of pile driving at project site A would occur for approximately 10 months during 2019 and the loudest period of superstructure work at project site A would occur for approximately 12 months during 2020. Consequently, the maximum noise levels predicted by the construction noise analysis would not persist throughout the construction period and would occur within each receptor area only for a limited period of time. Construction noise levels occurring outside the period of the maximum would still result in exceedances of CEQR impact criteria at some times, including noise level increments up to approximately 7 dBA during exteriors and interior work at project site A (approximately 11 months) and approximately 3 dBA during interiors work at project site A (approximately 10 months), but would be substantially lower than the maximum construction noise levels during pile driving and superstructure work.

The building at 539 West 28th Street was determined by field observations to have insulated glass windows and an alternative means of ventilation (i.e., PTAC units) and the building at 546 West 29th Street is anticipated to be designed with insulated glass windows and an alternative means of ventilation, which would be expected to provide approximately 30 dBA window/wall attenuation. Consequently, interior noise levels at 539 West 28th Street and 546 West 29th Street during construction would be in the low 50s dBA, up to approximately 6 dBA higher than the 45 dBA threshold recommended for residential use according to CEQR noise exposure guidelines.

Based on the prediction of construction noise levels up to the high 70s dBA with construction noise level increments up to approximately 14 dBA and a duration of maximum construction noise up to approximately 22 months with CEQR impact criteria exceedances occurring for up to a total of approximately 43 months, construction noise associated with the proposed actions would have the potential to result in a significant adverse impact at 539 West 28th Street and 546 West 29th Street.

15 Hudson Yards

At 15 Hudson Yards, located on the northeast corner of Eleventh Avenue and West 30th Street—Receptors 75 to 78—the existing noise levels range from the low 60s to low 70s dBA depending on height above grade (i.e., floor of the building).

Construction for the proposed actions is predicted to produce noise levels at these receptors up to mid 70s dBA with noise level increases up to approximately 12 dBA during the most noise-intensive stages of construction (i.e., excavation/foundation of project sites A and B, and when superstructure, exteriors and interior work at project site A and exteriors work at project site B overlap) and construction noise levels up to high 60s dBA with noise level increases up to approximately 6 dBA during other stages of construction. The predicted noise level increases would be noticeable, but the overall noise levels would be in the range considered typical for Manhattan and for this area in general. According to *CEQR Technical Manual* noise exposure criteria, noise levels when superstructure, exteriors and interior work at project site A and exteriors work at project site B overlap at these receptors would be in the “marginally unacceptable” category.

During the approximately 4 years of construction of project sites A and B, the activities that would produce the highest noise levels would be pile driving at project site A overlapping with similar activities at project site B, and crane, generator, bobcat and truck operations during superstructure work at project site A. The loudest period of pile driving at project site A would occur for approximately 10 months during 2019 and the loudest period of superstructure work at project site A would occur for approximately 12 months during 2020. Consequently, the maximum noise levels predicted by the construction noise analysis would not persist throughout the construction period and would occur immediately adjacent to each receptor area only for a limited period of time. Construction noise levels occurring outside the period of the maximum would still result in exceedances of CEQR impact criteria at some times, including noise level increments up to approximately 6 dBA during exteriors and interior work at project site A (approximately 11 months) and approximately 5 dBA during demolition at project site B (approximately 5 months), but would be substantially lower than the maximum pile driving, crane, generator, bobcat and truck-generated construction noise levels.

The site at 15 Hudson Yards contains a Noise (E) designation requiring at least 40 dBA window/wall attenuation. Consequently, interior noise levels at 15 Hudson Yards during construction would be in the high 30s dBA, which would be considered acceptable according to CEQR noise exposure guidelines.

Based on the prediction of interior noise levels during construction at 15 Hudson Yards, construction noise associated with the proposed actions would not have the potential to result in a significant adverse impact at 15 Hudson Yards.

Residences along West 30th and West 29th Streets

At residences along West 30th and West 29th Street—Receptors 11, 12, 17 to 19, 36 to 38, and 43 to 55—the existing noise levels range from the low to high 60s dBA depending on shielding and height above-grade (i.e., floor of the building).

Construction for the proposed actions is predicted to produce noise levels at these receptors up to low 70s dBA with noise level increases up to approximately 9 dBA during the most noise-intensive stages of construction (i.e., excavation/foundation of project sites A and B, and when superstructure, exteriors and interior work at project site A and exteriors work at project site B overlap) and construction noise levels in the mid 60s dBA with noise level increases approximately less than 3 dBA during other stages of construction. The predicted noise level increases would be noticeable, but the overall noise levels would be in the range considered typical for Manhattan and for this area in general. According to *CEQR Technical Manual* noise exposure criteria, noise levels throughout construction at these receptors would be in the “marginally unacceptable” category.

During the approximately 4 years of construction of project sites A and B, the construction activities that would produce the highest noise levels would be concrete saw and chipping gun operations at both project sites A and B. The loudest period of concrete saw and chipping gun operations would occur for approximately 12 months during 2020. Consequently, the maximum noise levels predicted by the construction noise analysis would not persist throughout the construction period and would occur immediately adjacent to each receptor area only for a limited period of time. Construction noise levels occurring outside the period of the maximum would still result in exceedances of CEQR impact criteria at some times, including noise level increments up to approximately 4 dBA during excavation/ foundation work at project sites A and B (10 months), but would be substantially lower than the maximum levels during maximum concrete saw and chipping gun-generated construction noise levels. Furthermore, construction noise associated with the proposed actions would typically occur during daytime hours when residences are less sensitive to noise.

Based on the prediction of construction noise levels up to the low 70s dBA with construction noise level increments up to approximately 9 dBA and CEQR impact criteria exceedances occurring for a total of up to approximately 12 months, construction noise associated with the proposed actions at these receptors would not be expected to result in a significant adverse impact.

Residences along West 28th Street/South of West 28th Street and Tenth Avenue

At residences along West 28th Street, south of West 28th Street and Tenth Avenue—Receptors 13 to 15, 20 to 22, 26 to 34, 39 to 42, 56 to 59, and 65 to 74—the existing noise levels range from the low to high 60s dBA depending on shielding and height above-grade (i.e., floor of the building).

Construction for the proposed actions is predicted to produce noise levels at these receptors up to low 60s dBA with noise level increases up to approximately less than 3 dBA during all stages of construction. The predicted noise level increases may be noticeable, but the overall noise levels would be in the range considered typical for Manhattan and for this area in general. According to *CEQR Technical Manual* noise exposure criteria, noise levels throughout construction at these receptors would be in the "marginally unacceptable" category.

Based on the prediction of construction noise levels up to the low 60s dBA with construction noise level increments up to approximately less than 3 dBA during all phases of construction, construction noise associated with the proposed actions at these receptors would not be expected to result in a significant adverse impact.

High Line

At open space areas in the High Line—Receptors 79 to 85—the existing noise levels are in the low 60s to low 70s dBA. These levels currently exceed the CEQR acceptable range (55 dBA $L_{10(1)}$) for an outdoor area requiring serenity and quiet.

Construction for the proposed actions is predicted to produce noise levels at receptors on the High Line directly across West 30th Street from the construction work areas (i.e., Receptors 81 to 83) in the mid 60s to high 70s dBA with noise level increases up to approximately 14 dBA during the most noise-intensive stages of construction (i.e., excavation/foundation of project sites A and B, and when superstructure, exteriors and interior work at project site A and exteriors work at project site B overlap), and construction noise levels in the low to mid 40s dBA with noise level increases of less than 1 dBA during other stages of construction. The loudest construction activities would occur for approximately 38 months.

At other receptors in the High Line (i.e., Receptors 79, 80, 84, and 85), construction for the proposed actions is predicted to produce noise levels in the mid 60s to mid 70s dBA with noise level increases up to approximately 7 dBA during the most noise-intensive stages of construction (i.e., exteriors and interior work at project site A) and construction noise levels in the mid 30s to high 60s dBA with noise level increases up to approximately 3 dBA during other stages of construction. The loudest construction activities would occur for approximately 12 months.

The predicted noise levels during construction at these open spaces areas would exceed the levels recommended by CEQR for passive open spaces (55 dBA L_{10}). (Noise levels in these areas already exceed CEQR recommended values under the existing condition). Due to the duration (approximately 38 months) of the construction noise at receptors on the High Line directly across West 30th Street from the construction work areas (i.e., Receptors 81 to 83), these receptors would experience significant adverse noise impacts due to construction.

However, because of the shorter duration (approximately 12 months) and lower magnitude of construction noise, other receptors (Receptors 79, 80, 84, and 85) in the High Line would not be expected to result in a significant adverse impact.

While receptors in the High Line directly across West 30th Street from the construction work area would be expected to experience a significant adverse impact, even during the portions of the construction period that would generate the most noise at these receptors, this portion of the park could still be enjoyed without the effects of construction noise outside of the hours that construction would occur, e.g., during late afternoon/evening and on weekends.

Hudson River Park and Route 9A Bikeway

At open space receptors in the Hudson River Park and Route 9A Bikeway—Receptors 86 to 88—the existing noise levels are in the high 70s dBA.

Construction for the proposed actions is predicted to produce noise levels at these receptors in the low 40s to high 60s dBA, with noise level increases of less than 1 dBA during all stages of construction.

The predicted noise levels during construction at these open space areas would exceed the levels recommended by CEQR for passive open spaces (55 dBA L_{10}). However, noise levels in these areas already exceed CEQR recommended values under the existing condition.

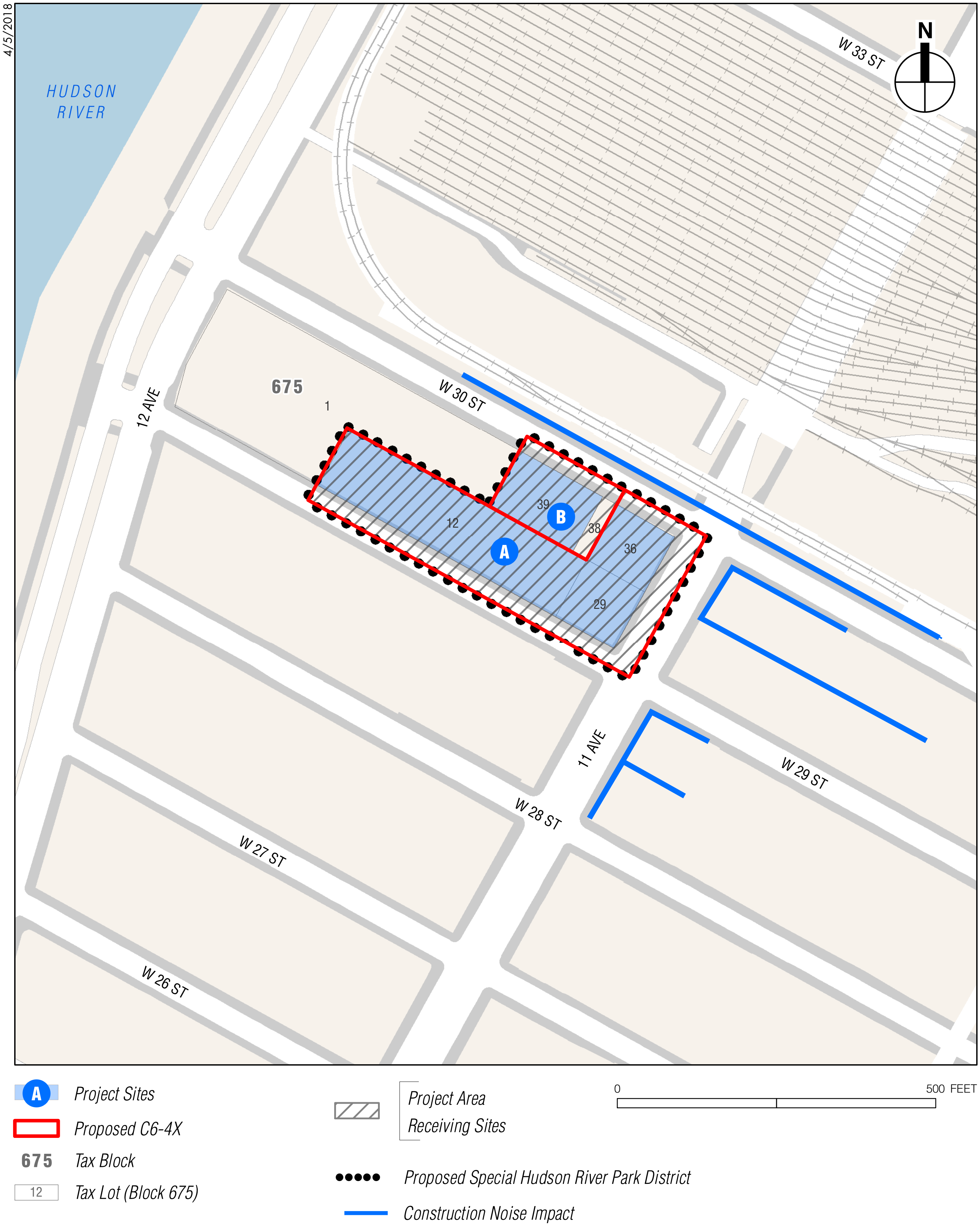
Based on the predicted magnitude and duration of potential exceedances of CEQR noise impact criteria, construction noise associated with the proposed actions in the Hudson River Park and Route 9A Bikeway would not be expected to result in a significant adverse impact at these receptors.

CONCLUSIONS

The detailed modeling analysis concluded that construction for the proposed actions has the potential to result in construction noise levels that exceed *CEQR Technical Manual* noise impact criteria for an extended period of time at 534 West 30th Street, residences near Eleventh Avenue and West 29th Street, 15 Hudson Yards and areas on the High Line directly across West 30th Street from the construction work areas (see **Figure 20-5**).

The north, south, and west façades of 534 West 30th Street would experience exterior noise levels up to low 80s dBA, which represents increases in noise levels up to approximately 14 dBA compared with existing levels for approximately a 22 month period during construction and exterior noise levels in up to mid 70s dBA, which represents increases in noise levels up to approximately 9 dBA compared with existing levels for up to approximately 38 months of construction. The north and west façades of residences near Eleventh Avenue and West 29th Street would experience exterior noise levels up to high 70s dBA, which represents increases in noise levels up to approximately 14 dBA compared with existing levels for approximately a 22 month period during construction and exterior noise levels up to low 70s dBA, which represents increases in noise levels up to approximately 7 dBA compared with existing levels for up to approximately 43 months of construction. Areas on the High Line directly across West 30th Street from the construction work areas would experience noise levels in the mid 60s to high 70s dBA, which represents increases in noise levels up to approximately 14 dBA compared with No Action levels for approximately a 38 month period during construction.

Construction noise levels of this magnitude and duration would constitute a significant adverse impact at these locations. At other receptors near the project site, including open space, residential, and institutional receptors, noise resulting from construction for the actions projects may at times be noticeable, but would be temporary and would generally not exceed typical noise levels in the general area and so would not rise to the level of significant adverse noise impacts.



Note: Since the publication of the DEIS, Lots 12, 29, and 36 have been formally merged into a single lot, Lot 12. This FEIS figure does not reflect that change.

Construction Noise Impact Locations

Figure 20-5

BLOCK 675 EAST

There are no feasible and practical measures to mitigate the construction noise impacts predicted to occur at 534 West 30th Street, residences near Eleventh Avenue and West 29th Street and portions of the High Line directly across West 30th Street from the construction work areas. The residences identified already have insulated glass windows and alternate means of ventilation allowing for the maintenance of a closed-window condition (i.e., air conditioning). Therefore, further receptor controls at these residences would not be effective in substantially reducing noise levels at the residences. Further, there would be no practical or feasible mitigation options at the High Line that would be effective in reducing the construction noise level increments to below the *CEQR Technical Manual* impact criteria or that would reduce the duration of those exceedances to less than two years. Construction noise mitigation options for the proposed actions would not significantly lower the cumulative construction noise levels at these receptors during times that construction of the proposed actions would overlap with construction of these other nearby projects. Therefore, no construction noise mitigation measures are proposed beyond those identified in the "Noise Reduction Measures" section above.

Construction Noise at Project Site B upon Completion

The proposed project site B is expected to be completed and occupied prior to the completion of construction at project site A. Consequently, occupants of the proposed project site B building would potentially be subject to noise from construction of project site A. Therefore, the noise exposure at the completed and occupied project site B building was predicted. To represent the worst-case construction noise levels, the project site B building was assumed to be completed and occupied during simultaneous and one month of superstructure, exteriors and interior/finishing work at the proposed project site A building.

Under these conditions, noise levels at the proposed project site B building are predicted to be up to low 70s dBA. As described in Chapter 17, "Noise," the design of the proposed project site B building would be required to include building façades providing ~~33~~ between 28 and 31 dBA of window/wall attenuation, and an alternative means of ventilation that does not degrade the acoustical performance of the façade. As such, during the time that the proposed project site B building is expected to be occupied and construction activities would be occurring at the project site A (approximately 21 months), interior noise levels at these receptors would be in the ~~high 30s to~~ low-to-mid 40s dBA, up to approximately 2 dBA lower than the 45 dBA threshold recommended for residential use~~, which would be considered acceptable~~ according to CEQR noise exposure guidelines.

Based on the predicted magnitude and duration of potential exceedances of CEQR noise impact criteria, noise associated with the construction of project site A would not be expected to result in a significant adverse impact at project site B.

Consideration of the Hudson Tunnel Project

As discussed in Chapter 1, "Project Description," the Hudson Tunnel Project is expected to start in 2019 with completion of the project expected in 2026. Construction activities would take place on the western portion of the project block immediately west of the Project Area. In addition, a portion of Lot 12 on project site A may be used for construction staging. Based on the conceptual construction schedule presented in the Hudson Tunnel DEIS, the most noise intensive periods of construction activity from the Hudson Tunnel Project (i.e., pile driving associated with the Twelfth Avenue shaft and 30th Street work) would occur in between December 2019 and April 2020 and again between September 2020 and March 2021. Between December 2019 and April 2020, project site A is anticipated to be in the superstructure, exteriors, interiors, and finishing stages of construction and project site B is anticipated to be in the exteriors, interiors and finishing stages of construction. Between September 2020 and March 2021, project site A is anticipated to be in the exteriors, interiors and finishing stages of construction and construction activities at project site B are anticipated to be completed. Excavation and foundation are typically the noisiest construction stages. Therefore, it is expected that the cumulative effect of construction noise levels experienced at receptors surrounding the proposed project from the proposed projects and the Hudson Tunnel Project would be negligible when compared to the construction noise levels resulting from either project. Consequently, the construction noise levels at nearby receptor locations would be attributed to either the Hudson Tunnel Project as disclosed in the Hudson Tunnel DEIS or by the proposed actions, which are discussed above.

Therefore, taking into consideration the Hudson Tunnel Project, there would be no additional significant adverse noise impacts from construction activities or additional mitigation measures needed.

VIBRATION

INTRODUCTION

Construction activities have the potential to result in vibration levels that may result in structural or architectural damage, and/or annoyance or interference with vibration-sensitive activities. Vibratory levels at a receiver are a function of the source strength (which is dependent upon the construction equipment and methods utilized), the distance between the equipment and the receiver, the characteristics of the transmitting medium, and the receiver building construction. Construction equipment operation causes ground vibrations, which spread through the ground and decrease in strength with distance. Vehicular traffic, even in locations close to major roadways, typically does not result in perceptible vibration levels unless there are discontinuities in the roadway surface. With the exception of the case of fragile and possibly historically significant structures or buildings, construction activities generally do not reach the levels that can cause architectural or structural damage, but can achieve levels that may be perceptible and annoying in buildings very close to a construction site. An assessment has been prepared to quantify potential vibration impacts of construction activities on structures and residences near the project site.

CONSTRUCTION VIBRATION CRITERIA

For purposes of assessing potential structural or architectural damage, the determination of a significant impact was based on the vibration impact criterion used by LPC of a peak particle velocity (PPV) of 0.50 inches/second as specified in the NYCDOB TPPN #10/88. For non-fragile buildings, vibration levels below 0.60 inches/second would not be expected to result in any structural or architectural damage.

For purposes of evaluating potential annoyance or interference with vibration-sensitive activities, vibration levels greater than 65 vibration decibels (VdB) would have the potential to result in significant adverse impacts if they were to occur for a prolonged period of time.

ANALYSIS METHODOLOGY

For purposes of assessing potential structural or architectural damage, the following formula was used:

$$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$$

where: PPV_{equip} is the peak particle velocity in in/sec of the equipment at the receiver location;

PPV_{ref} is the reference vibration level in in/sec at 25 feet; and

D is the distance from the equipment to the received location in feet.

For purposes of assessing potential annoyance or interference with vibration sensitive activities, the following formula was used:

$$L_v(D) = L_v(ref) - 30\log(D/25)$$

where: $L_v(D)$ is the vibration level in VdB of the equipment at the receiver location;

$L_v(ref)$ is the reference vibration level in VdB at 25 feet; and

D is the distance from the equipment to the receiver location in feet.

Table 20-21 shows vibration source levels for typical construction equipment.

Table 20-21
Vibration Source Levels for Construction Equipment

Equipment		PPV_{ref} (in/sec)	Approximate L_v (ref) (VdB)
Pile Driver (impact)	Upper Range	1.518	112
	Typical	0.644	104
Hydromill (slurry wall)	In soil	0.008	66
	In rock	0.017	75
Clam shovel drop (slurry wall)		0.202	94
Vibratory Roller		0.210	94
Hydraulic Break Ram		0.089	87
Large bulldozer		0.089	87
Caisson drilling		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Small bulldozer		0.003	58

Source: *Transit Noise and Vibration Impact Assessment*, FTA-VA-90-1003-06, May 2006.

The source vibration levels shown in **Table 20-21** were projected to nearby receptors to estimate the levels of construction vibration that would occur in the study area.

CONSTRUCTION VIBRATION ANALYSIS RESULTS

The building of most concern with regard to the potential for structural or architectural damage due to vibration is the 34-story 534 West 30th Street mixed use residential building located approximately 100 feet east of the of the project sites. Based on the distance from the project sites, PPV would not exceed the most stringent 0.5 in/sec threshold at the receptor location mentioned above.

While vibration resulting from impact pile driving may be perceptible and potentially intrusive, it would be of limited duration as pile driving activities would not last more than approximately 10 months. Furthermore, vibration levels would be lower at floors above the grade level (reducing by approximately 1–2 dB per floor), and at the nearest receptor (i.e., 534 West 30th Street), vibration levels would be below the perceptible threshold at the 18th floor and above.

Consequently, there is no potential for significant adverse vibration impacts from the proposed actions.

OTHER TECHNICAL AREAS

HISTORIC AND CULTURAL RESOURCES

As described in Chapter 8, "Historic and Cultural Resources," the Project Area does not possess archaeological significance and no further assessment is warranted. Therefore, the proposed projects do not have the potential to result in construction period archaeological impacts.

The proposed actions would not result in any significant adverse impacts to architectural resources in the Project Area as no historic architectural resources are located in the Project Area. The granting site, which contains Piers 59, 60, and 61, and their associated headhouses would not be affected by the proposed actions.

Within the 400-foot study area, architectural resources analyzed include (S/NR) properties and districts or S/NR-eligible properties; and NYCLs and Historic Districts, and properties determined eligible for landmark status ("known architectural resources"). Additionally, a survey was conducted to identify any previously undesignated properties in the study area, which were then evaluated for their potential S/NR or NYCL eligibility ("potential architectural resources"). No architectural resources in the 400-foot radius from the Project Area would be directly affected by the proposed actions. Proposed construction activities in the northern portion of the Project Area would occur within 90 feet of the High Line. To protect this historic architectural resource during project construction—including protections for ground-borne vibration, falling debris, and accidental damage from heavy machinery—a Construction Protection Plan (CPP) would be prepared and implemented. Therefore, the proposed actions would not result in any significant adverse impacts to historic architectural resources.

HAZARDOUS MATERIALS

A detailed assessment of potential impacts on hazardous materials is described in Chapter 10, "Hazardous Materials." The hazardous materials assessments identified various potential sources of subsurface contamination on, or in close proximity to, the proposed project sites. Potential sources of contamination include past or present industrial and automotive uses including a gasoline station and automobile/truck repair (with gasoline, diesel and waste oil above-ground storage tanks [ASTs] and underground storage tanks [USTs], and hydraulic lifts), spray paint booths, a freight business, a smelting and refining facility, an iron works, an asbestos warehouse, and a solid waste transfer station. There were also known petroleum spills on Lots 36 and 39; the spills were given a "closed" status by the New York State Department of Environmental Conservation (DEC); however, residual contamination likely remains in place.

To reduce the potential for adverse impacts associated with new construction resulting from the proposed actions, further environmental investigations and remediation will be required. To ensure that these investigations are undertaken, hazardous materials (E) Designations would be placed on the proposed project site lots and Lot 38. The (E) Designation requires approval by the New York City Office of Environmental Remediation (OER) prior to obtaining NYC Buildings Department (DOB) permits for any new development entailing soil disturbance.

Impacts would be avoided by incorporating the following measures:

- The proposed project sites would comply with the hazardous materials (E) Designation requirements. Prior to any new construction entailing subsurface disturbance, the applicant would submit a Phase I Environmental Site Assessment (ESA) and sampling protocol (for any potential additional subsurface investigation) to OER for review and approval. A report documenting the subsurface investigation findings along with a Remedial Action Plan (RAP) setting out procedures to be followed prior to, during, and following construction (e.g., for soil management, tank removal, dust control, air monitoring for workers and the community, health and safety, and vapor controls for the new building) is then submitted for OER review and approval. Documentation that the RAP procedures were properly implemented is required by OER before New York City building permits allowing occupancy can be issued.

- During excavation for the proposed buildings on each project site, any known or unexpectedly encountered tanks would be properly closed and removed along with any contaminated soil and would be registered with DEC and/or FDNY, if applicable. Any evidence of a petroleum spill would be reported to DEC and addressed in accordance with applicable requirements.
- If dewatering is necessary for the proposed construction, testing would be performed to ensure that the groundwater would meet DEP sewer discharge requirements. If necessary, the water would be pretreated prior to discharge to the City's sewer system, as required by DEP permit/approval requirements.
- Prior to and during any demolition or renovation of any structures, federal, state and local requirements relating to asbestos-containing materials (ACM) and lead-based paint (LBP) would be followed.
- Unless there is labeling or test data indicating that any suspect polychlorinated biphenyls (PCBs)-containing hydraulic lift, electrical equipment, and fluorescent lighting fixtures do not contain PCBs, and that any fluorescent lighting bulbs do not contain mercury, disposal would be conducted in accordance with applicable federal, state, and local requirements.

With the inclusion of these measures, the proposed actions would not result in significant adverse impacts related to hazardous materials.

OPEN SPACE

There are no publicly accessible open spaces within the Project Area and no open space resources would be used for staging or other construction activities. The nearest open space resources are the High Line immediately north of the project sites and the Hudson River Park to the west of the project sites across Route 9A/Twelfth Avenue. Access to these open space resources or any nearby open space resources would be maintained throughout the duration of the construction period.

Construction for the proposed actions is predicted to produce noise levels at receptors on the High Line directly across West 30th Street from the construction work areas in the mid 60s to high 70s dBA with noise level increases up to approximately 14 dBA during the most noise-intensive stages of construction (i.e., excavation/foundation of project sites A and B, and when superstructure, exteriors and interior work at project site A and exteriors work at project site B overlap) and construction noise levels in the low to mid 40s dBA with noise level increases of less than 1 dBA during other stages of construction. The loudest construction activities would occur for approximately 38 months. However, because of the shorter duration and lower magnitude of construction noise at farther locations within the High Line, it would not be expected to result in a significant adverse impact outside of the areas directly across West 30th Street.

The predicted noise levels during construction at these open spaces areas would exceed the levels recommended by CEQR for passive open spaces (55 dBA L_{10}). Noise levels in these areas already exceed CEQR recommended values under the existing condition. Due to the duration (approximately 38 months) of the construction noise at receptors on the High Line directly across

West 30th Street from the construction work areas (i.e., Receptors 81 to 83), these receptors would experience significant adverse noise impacts due to construction.

While receptors in the High Line directly across West 30th Street from the construction work area would be expected to experience a significant adverse impact, even during the portions of the construction period that would generate the most noise at these receptors, this portion of the park could still be enjoyed without the effects of construction noise outside of the hours that construction would occur, e.g., during late afternoon/evening and on weekends.

In addition, measures would be implemented to control air emissions, dust, noise, and vibration from the Project Area during construction. While construction of the proposed actions may cause temporary disruptions to other nearby open spaces, particularly related to noise, it is expected that such disruptions in any given area would be temporary and would not be ongoing for the full duration of the construction period. Therefore, no additional significant construction impacts are anticipated on open space.

SOCIOECONOMIC CONDITIONS

Construction activities could temporarily affect pedestrian and vehicular access. However, lane and/or sidewalk closures would not obstruct entrances to any existing businesses, and businesses are not expected to be significantly affected by any temporary reductions in the amount of pedestrian foot traffic or vehicular delays that could occur as a result of construction activities. MPT plans would be developed for any temporary curb-lane and sidewalk narrowing/closures as required by DOT. This work would be coordinated with and approved by DOT's OCMC. Overall, construction activities associated with the proposed actions would not result in any significant adverse impacts on surrounding businesses.

Construction would create direct benefits resulting from expenditures on labor, materials, and services, and indirect benefits created by expenditures by material suppliers, construction workers, and other employees involved in the direct activity. Construction also would contribute to increased tax revenues for the City and State, including those from personal income taxes.

COMMUNITY FACILITIES

No community facilities would be directly affected by construction activities for an extended duration. The Project Area will be surrounded by construction fencing and barriers that would limit the effects of construction on nearby facilities. Construction workers would not place any burden on public schools and would have minimal, if any, demands on libraries, child care facilities, and health care. Construction of the proposed buildings would not block or restrict access to any facilities in the area, and would not materially affect emergency response times significantly. The NYPD and FDNY emergency services and response times would not be materially affected due to the geographic distribution of the police and fire facilities and their respective coverage areas.

LAND USE AND NEIGHBORHOOD CHARACTER

Construction activities would affect land use within the Project Area but would not alter surrounding land uses. As is typical with construction projects, during periods of peak construction activity there would be some disruption, predominantly noise, to the nearby area. There would be construction trucks and construction workers coming to the project sites. These disruptions would be temporary in nature and would have limited effects on land uses within the study area, particularly as most construction activities would take place within each of the project sites or within portions of sidewalks, curbs, and travel lanes of public streets immediately adjacent to the project sites. In addition, measures would be implemented to control noise, vibration, emissions, and dust on construction sites, including the erection of construction fencing. The fencing would reduce potentially undesirable views of the construction site and buffer noise emitted from construction activities. Overall, while the construction at the project sites would be evident to the local community, the temporary nature of construction would not result in significant or long-term adverse impacts on local land use patterns or the character of the nearby area. ✷